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MORRIS FISHBEIN, M.D.

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Acta Dermato-Venereologica. Stockholm.
Actas de la Sociedad de Cirugía de Madrid.
American Heart Journal. St. Louis.
American Journal of Anatomy. Philadelphia.
American Journal of Cancer. New York.
American Journal of Clinical Pathology. Baltimore.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia.
American Journal of Obstetrics and Gynecology. St. Louis.
American Journal of Ophthalmology. St. Louis.
American Journal of Orthopsychiatry. Menasha, Wis.
American Journal of Pathology. Boston.
American Journal of Physical Therapy. Chicago.
American Journal of Physiology. Baltimore.
American Journal of Psychiatry. Baltimore.
American Journal of Public Health. New York.
American Journal of Roentgenol. & Rad. Therapy. Springfield, Ill.
American Journal of Surgery. New York.
American Journal of Syphilis. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Review of Tuberculosis. New York.
Annales d'Anatomie Pathologique. Paris.
Annales de Dermatologie et de Syphiligraphie. Paris.
Annales des Maladies Vénériennes. Paris.
Annals of Internal Medicine. Ann Arbor, Mich.
Annals of Medical History. New York.
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Annals of Surgery. Philadelphia.
Archiv für Dermatologie und Syphilis. Berlin.
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Archiv für Schiffs- und Tropen-Hygiene. Leipzig.
Archiv für Verdauungs-Krankheiten. Berlin.
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*Archives of Internal Medicine. A. M. A., Chicago.
Archives des Maladies de l'Appareil Digestif, etc. Paris.
Archives des Maladies du Cœur, etc. Paris.
Archives de Médecine des Enfants. Paris.
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Beihefte zum Archiv für Schiffs-und Tropen-Hygiene. Leipzig.
Beiträge zur Klinik der Tuberkulose. Berlin.
Beiträge zur klinischen Chirurgie. Berlin.
Bibliotek for Læger. Copenhagen.
Bollettino e Memorie della Societá Piemontese di Chirurgia. Turin.
Borba s Tuberkulezom. Moscow.
Brain. London.
Bristol Medico-Chirurgical Journal.
British Journal of Anæsthesia. Manchester.
British Journal of Children's Diseases. London.
British Journal of Dermatology and Syphilis. London.
British Journal of Experimental Pathology. London.
British Journal of Ophthalmology. London.
British Journal of Physical Medicine. London.
British Journal of Radiology. London.
British Journal of Surgery. Bristol.
British Journal of Tuberculosis. London.
British Journal of Urology. London.
British Medical Journal. London.
Bulletin of the Johns Hopkins Hospital. Baltimore.
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Bulletin of Neurological Institute of New York. Baltimore.
California and Western Medicine. San Francisco.
Canadian Medical Association Journal. Montreal.
Canadian Public Health Journal. Toronto.
Chinese Medical Journal. Shanghai.
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Colorado Medicine. Denver.
Cuore e Circolazione. Rome.
Delaware State Medical Journal. Wilmington.
Dermatologische Wochenschrift. Leipzig.
Dermatologische Zeitschrift. Berlin.
Deutsche medizinische Wochenschrift. Leipzig.
Deutsche Zeitschrift für Chirurgie. Berlin.
Deutsche Zeitschrift für Nervenheilkunde. Berlin.
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Edinburgh Medical Journal.
Endocrinology. Los Angeles.
Finska Läkaresällskapets Handlingar. Helsingfors.
Folia Medica. Naples.
Frankfurter Zeitschrift für Pathologie. Munich.
"Gann," Japanese Journal of Cancer Research. Tokyo.
Giornale di Batteriologia e Immunologia. Turin.
Giornale di Clinica Medica. Parma.
Glasgow Medical Journal.
Guy's Hospital Gazette. London.
Guy's Hospital Reports. London.
Heart. London.
Hospitalstidende. Copenhagen.
Hygiea. Stockholm.
Illinois Medical Journal. Chicago.
Indian Journal of Medical Research. Calcutta.
Indian Medical Gazette. Calcutta.
Indian Medical Research Memoirs. Calcutta.
International Journal of Psycho-Analysis. London.
Irish Journal of Medical Science. Dublin.
Jahrbuch für Kinderheilkunde. Berlin.
Japanese Journal of Experimental Medicine. Tokyo.
Japanese Journal of Gastroenterology. Kyoto.
Japanese Journal of Obstetrics and Gynecology. Kyoto.
Journal of Alabama State Medical Association. Montgomery.
Journal of Allergy. St. Louis.
Journal of Anatomy. London.
Journal of the Arkansas Medical Society. Little Rock.
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Kazansky Meditsinsky Jurnal. Kazan.
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Klinische Wochenschrift. Berlin.
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Morgagni. Naples.
Münchener medizinische Wochenschrift. Munich.
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New England Journal of Medicine. Boston.
New Orleans Medical and Surgical Journal.
New York State Journal of Medicine. New York.
Nordisk Medicinsk Tidskrift. Uppsala.
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Northwest Medicine. Seattle.
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Nutrition. Paris.
Occupational Therapy and Rehabilitation. Baltimore.
Ohio State Medical Journal. Columbus.
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Pediatria. Naples.
Pennsylvania Medical Journal. Harrisburg.
Philippine Journal of Science. Manila.
Physical Therapeutics. Elmira, N. Y.
Policlinico (Pract. Sect., Med. Sect. and Surg. Sect.). Rome.
Polska Gazeta Lekarska. Lwów.
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Virginia Medical Monthly. Richmond.
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SUBJECT INDEX

This is an index to all the reading matter in The Journal. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "ME," Medical Economics; "ab," abstract; the star (*) indicates an original article in The Journal.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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Acad.—Academy
Am.—American
A.—Association
Coll.—College
Conf.—Conference
Cong.—Congress
Conv.—Convention
Dist.—District
Hosp.—Hospital
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Phar.—Pharmaceutical
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Ry.—Railway
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SOME PRESSING PROBLEMS IN ALLERGY

CHAIRMAN'S ADDRESS

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In spite of the fact that the treatment of allergic conditions is fairly satisfactory, the fact remains that treatment is largely empiric. Advantage is taken of the fact that allergic persons frequently show skin reactions to their respective allergens to determine the specific allergenic substances, but there are many irregularities found in skin reactivity and the reasons for them are imperfectly understood. Treatment with the substance to which the patient is sensitive frequently produces good results, but there is still much room for argument as to the mechanism underlying the response to treatment. Some of the problems found in an attempt to explain these conditions are due to deficiencies in the knowledge of immunology in general, but some of them may be solved by careful, concerted study by the clinical investigator and the laboratory worker. In this field where animal experimentation may fail to reproduce human reactions, accurate observation of carefully controlled patients may provide the material for the solution of some vexing problems. A few of these problems which deserve attention will be mentioned.

BASIS FOR HEREDITARY INFLUENCE

One of the most definite findings in allergy is the hereditary transmission of "something." Since this frequently is not the transmission of the identical sensitiveness of parent to child as to either allergenic substance or location of the site of reaction, the usual statement made is that the inheritance is of a "tendency." This is a term used to represent an intangible thing and, of course, answers no questions. Would it not be possible to assume that this transmitted "tendency" has its basis in the transmission of some anatomic abnormality which may be just as definite as polydactylism and just as definitely conforming to the laws of inheritance? Would it not be possible to believe that persons are allergic because of an abnormal type of response that has its basis in abnormal function which, in turn, results from an anatomic variation? There is, of course, no present proof available for such an assumption, but to my mind it produces no greater strain on the imagination than to speak of a "tendency" and has the distinct advantage of reminding one that the search for a basis—anatomic, physiologic or chemical—should be kept in mind and offers a concrete goal toward which to work.

There has been no lack of attempt to explain allergic phenomena on an immunologic basis, but there is reason to believe that the treatment of a specific type of reaction, e. g., asthma, with the specific allergen is, after all, symptomatic treatment. The facts that multiple sensitivity is the rule, that persons become sensitive to one thing after another and that clinical sensitiveness is frequently the result of exposure to some particular allergen and, consequently, may be considered as accidental, all tend to call attention to the fact that the allergic person has a fundamental abnormality which may manifest itself in various ways depending on different conditions. That this fundamental abnormality is the same in all allergic persons and the different manifestations are more or less accidents is a possibility which deserves consideration. It may seem a rash prophecy, but it is not entirely impossible that at some time this fundamental condition may be determined and the treatment of all allergic persons then become the same.

RELATIONSHIP OF ENDOCRINE ORGANS AND INVOLUNTARY NERVOUS SYSTEM

Various observers have suggested the possible influence of one or another of the endocrine organs. Objection can be raised to these assumptions, and lack of substantial evidence can be shown in every instance. The involuntary nervous system also has been incriminated, but only a mass of conflicting observations and opinions has resulted. However, the fact remains that many of the phenomena associated with allergy may be duplicated by activity of one or another part of the involuntary nervous mechanism. There is certainly much evidence to support the belief that allergic reactions are mediated by the involuntary nervous system. Whether the relationship is even more fundamental than this deserves consideration. The low blood sugar, the low blood pressure and the slow pulse rate so frequently seen in allergic persons cannot be mere accidental happenings. Just what their significance may be needs to be investigated. More and more the conviction is growing that eosinophilia is a manifestation of autonomic nervous action. Its common association with allergic reactions surely has more than diagnostic significance.

RELATION OF REAGIN TO CLINICAL HYPERSENSITIVENESS

Emphasis has been placed on the immunologic aspects of allergy, and a great deal of discussion has been

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carried on regarding the place of allergy in the classification of the various types of hypersensitiveness. The finding of reagin in the blood of allergic persons has led to the assumption that this antibody is responsible for the clinical manifestations of allergy. Definite differences, on the other hand, from the anaphylactic antibody have led to a refusal of some workers to designate allergy as a type of anaphylactic reaction. Evidence which has resulted from clinical observation tends to question some assumptions regarding the reagins. If this antibody is responsible for the clinical manifestations of allergy, how can one account for reagins for substances to which the patient shows no clinical sensitiveness or absence of reagin in the presence of clinical sensitiveness? Or how may the persistence of reagin long after the disappearance of all evidence of clinical sensitiveness be explained? It may be assumed that differences in reactivity of the "shock organ" may explain quantitative differences between amount of reagin and intensity of clinical manifestation, but this will not explain clinical sensitiveness of high degree with a total absence of reagin. It is true that in a great number of allergic persons reagin may be demonstrated, but it is equally true that in a not inconsiderable number reagin cannot be found. It may not be amiss to say that this subject deserves further study.

Dependent on the conception of the rôle of reagin is the belief as to the mechanism of specific treatment. If the reagin is the antibody mediating clinical sensitiveness, treatment is not desensitization, since it has been shown that the reagin is not diminished but may actually be increased as the result of treatment. If the reagin is not assigned this rôle, the question of what is being done in treatment is still open for investigation.

REACTIVITY OF THE SHOCK ORGAN

Differences in location of allergic manifestations have led to the assumption that there is at least a quantitative difference in the allergic state of the shock organs. Two persons exposed in the same manner to equal amounts of ragweed pollen may react, one with hay fever and the other with asthma. It has been commonly observed, however, that in constitutional reactions resulting from over-dosage in pollen treatment, the patient who has had an uncomplicated hay fever may react with hay fever, asthma and urticaria. In other words, a shock organ which has not shown clinical evidence of sensitiveness may, by this method of introduction of allergen into the body, respond with a violent reaction. Is this due to the unusual method of entrance of the allergen which causes qualitative differences from the allergen as usually introduced? Or it is due to a low grade sensitiveness of certain shock organs which will react under the stimulus of a larger dose?

Not only must one speculate as to why the skin of some allergic persons reacts to a given allergen while the respiratory mucosa does not, but one is confronted with the fact that in some persons recurring reactions tend to appear at the same site or sites while other skin areas remain unaffected. This would lead one to suspect the possibility of sensitization of one shock organ alone, and, indeed, of only parts of this organ. Some confirmation of this opinion is found in the fact that in some persons showing localized allergic reactions of the skin, positive reactions to the allergen may be obtained in these areas and not in other parts of the skin. The possibility of sensitizing limited areas has been seen recently in a patient, sensitive to wheat by ingestion, who had a localized eczema on the arms. Fragments of bread were strapped on his forearm and neck—two locations showing no eczema. No reaction occurred. However, two weeks later when the patient ate wheat, patches of eczema appeared exactly defining the location of the patch tests. Apparently sensitization of the sites had occurred, though no reaction was apparent within two weeks of the use of the patch test.

LOCAL IMMUNITY OR SENSITIZATION?

It is not a rare experience to see a sharp local reaction to an injection of pollen if the injections have been made previously in one arm and a change is made to the other arm which had received no injections prior to that time. The usual explanation given is that repeated injections into the same site bring about a certain amount of local immunity—or tolerance—so that an increase in dosage does not cause increased local reaction. On the other hand, not infrequently one sees a patient in whom injections have been made in each arm alternately and in whom an injection into one arm brings about an edematous area at the site of a previous injection in the other arm. The usual explanation given is that the injections have brought about a local sensitization which may cause a reaction when circulating allergen, injected into the other arm, reaches the sensitized area. Is it possible, then, that injections of pollen can produce both immunity—or tolerance—and sensitiveness at the site of the injection? Or do injections of pollen sometimes sensitize locally and sometimes immunize? Information on this subject would be valuable.

RATE OF ABSORPTION OF ALLERGEN

Cohen and his associates have offered evidence to show that the reaction of passively sensitized areas occurs later in allergic than in nonallergic persons when the allergen is introduced through the nasal mucosa or parenterally. And, conversely, every one doing clinical work with allergic persons has had the opportunity of seeing a constitutional reaction appear with startling rapidity after an injection of pollen which could be shown not to have entered a blood vessel. An explanation of these contradictory findings may have a definite bearing on the mechanism of the allergic reaction.

SENSITIZATION TO NONANTIGENIC SUBSTANCES

Most immunologists have refused to classify as allergens nonantigenic substances to which hypersensitiveness may be shown, on the ground that the substance is nonantigenic, there is no demonstrable inheritance and no reagins are found. But the fact remains that reactions from these substances may be clinically indistinguishable from true allergic reactions, and these persons are, after all, specifically sensitive. If one patient is specifically sensitive to cow hair and, on exposure, develops asthma while another person, specifically sensitive to cow hair, on contact develops a dermatitis, even though it may be shown that the chemical fraction causing asthma is not the same as that causing dermatitis, there still remains the fact that both persons are specifically sensitive. After all, may not the fundamental mechanism be the same? A considerable experience with "contact dermatitis" demonstrates that the substances causing the skin reaction are more commonly not irritants to the normal skin, that repeated or prolonged exposures frequently are not necessary to produce reactions and that the persons showing the lesions are specifically sensitized. Whether the present classification will stand under further investigation remains to be seen. Certainly when one remembers Sulzberger's experiment in which he was able to produce lesions in certain European guinea-pigs but could not similarly sensitize American guinea-pigs, the conclusion is forced on one that there may be conditions affecting the various manifestations of hypersensitiveness which so far have not been taken into account.

CONCLUSION

These points have been raised, not with the intention of disparaging the work which has been done, but to call attention again to the fact that there is a great amount to be done if work in allergy is to be placed on a scientific basis, and to remind the clinician as well as the laboratory worker that careful painstaking observation may assist in the solution of some of these perplexing problems.

THOUGHTS ON MEDICAL EDUCATION IN THE UNITED STATES

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Nine and twenty years ago this very month it was my privilege to preside at the meetings of this section in this delightful city. The picture of that week is a bright spot in my memory. Two occasions stand out sharply against a background of fruitful discussion and unbounded hospitality. The first was the discussion on yellow fever at the opening session of the Section on Practice of Medicine. The second was the address of the President of the Association.

It had seemed to us important that the discoveries of the Yellow Fever Commission in Cuba should be impressed on the American medical profession. One of the three referees chosen for this discussion was a distinguished teacher, no longer young in years, who had made us somewhat uneasy by requesting that he be allowed more than his allotted time. Although he was a brilliant and scholarly man with a distinguished career and a wide experience with yellow fever, we had feared that, at his age, he might not be willing to accept demonstrations which seemed to us convincing, and when, at the last minute, one of his two colleagues failed us, it was an anxious m[illegible]t. From the platform I wrote a line to Dr. W[illegible]o was in the audience, begging him to come [illegible]cue in the discussion. James Carroll was [illegible] referee. Then his co-referee, a young man o[illegible]ature years—for there was no younger man than he in the audience—arose. Fluently, within the time allowed him, he spoke of the relation of fomites to yellow fever infection, and pointed out the significance of the new work with a simplicity and a lucidity so convincing as to preclude all discussion. It was a masterly, and withal a rather dramatic performance, and no one who listened to Chaillé at that notable session is likely to forget it.

The other occasion was the address of the President, which was impressive, not only for the substance of the spoken words. The words were wise but the bearing, the physique, the face, the voice, the manner of the speaker made a lasting impression on more than one of the audience and deepened the feeling that was already ours, that this was no ordinary man. I need not say that the President of the Association was Frank Billings. His subject was "Medical Education in the United States."[1] In this address Billings set forth the broad ideals of the university school of medicine. Clearly and convincingly he pointed out that medicine, an applied science, should be taught in scientific fashion; that the instruction in such branches as anatomy, physiology, pharmacology and chemistry should be carried on in the laboratory by men who give their lives to teaching and investigation; that only students, salaried professors, could give such instruction; that furthermore, the study of diagnosis and treatment of disease should be carried out in special hospitals controlled by universities under the direction of

> professors of medicine, of surgery, and of obstetrics, with competent assistants, of the same type as the teacher of the fundamental sciences. . . . It is time, therefore, that the clinical teacher should have the knowledge necessary to carry on experimental investigation, with hospital facilities for the work that the profession may become purged of the shame of its helplessness in curing so many of the common diseases of mankind. In addition to the clinical teachers, who will devote all their time to teaching and research work in the special hospitals, there will be quite as much need for the clinical teacher, who is in private practice, in the general hospitals. . . . His rich and varied experience in hospital and private practice will enable him to round out the student's college education. . . . He will teach the student the art of medicine. . . . The present status of medical science requires and demands a university medical college course. By university medical college is meant a medical school which is directly connected with and a part of a university; the university fixing the requirements and controlling the admission of students to the medical department. The method of teaching both the fundamental and the clinical branches is on the principles outlined above. To properly prepare for such a course the student should have, as a *minimum* preparation, at least two years of study in a good college or university. The requirements to enter a good college or university would insure a sufficient knowledge of the ordinary school branches and also Latin or Greek. During the two years' course in college his time would be well spent in the study of English, French, German, mathematics, history, philosophy, physics, chemistry, general and organic, and qualitative analysis, comparative anatomy and general biology. The amount of time to be devoted to each of these subjects would be the same as that of students of general science, as arranged in all college curricula, with the exception of a much more thorough course in chemistry, biology, physics and comparative anatomy.
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> So prepared, the medical matriculate would be able to grasp all the intricacies of the subjects of the fundamental branches of medicine. With the addition of the full medical college course as outlined above, his education would be equal in culture to that of the graduate in arts and philosophy. At the same time, it would be practical and especially fit him for his work as a scientific investigator or practitioner, or for both.
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> With the medical profession so educated a physician would be, in truth, a member of a learned profession. From an educational point of view he would rank as an equal with the scholar in philosophy, law and theology. . . . As the direct agent by which the American Medical Association may exert its influence in the elevation and control of medical education, the Committee on Medical Colleges and Medical Education should be made permanent and should be given adequate power and sufficient annual appropriation to make its work effective.

These wise words were followed by a movement which has resulted in a great and general improvement of medical education in the United States, a movement

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The Frank Billings Lecture, read before the Section on Practice of Medicine at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Billings, F.: Medical Education in the United States, J. A. M. A. **40**: 1271 (May 9) 1903.

in which this Association has played a highly honorable part. Largely as the result of this address and of the recommendations of the Committee on Medical Colleges, presided over by Arthur D. Bevan, this committee was succeeded in the following year by the Council on Medical Education and Hospitals. It is hardly necessary to mention the active and courageous campaign carried on by this Council under Bevan's leadership. Its surprising revelations are still fresh in our memory, as is the remarkable report of Abraham Flexner to the Carnegie Foundation.[2]

Already, it is true, in better schools, teaching in the preclinical branches was fairly well endowed, and, at the Johns Hopkins University, several clinical departments had been established on what might properly be called a university plane.

In the last three decades much that Billings set forth as desirable has been realized. Many inferior proprietary schools have disappeared. The great majority of the seventy-six schools of medicine recognized by this Association are connected with universities. The teaching of anatomy, physiology, chemistry and pharmacology in these institutions is almost entirely in the control of students who give their whole time to instruction and research, who are, in a true sense, university professors. In a considerable number of schools clinical departments have, in like manner, been placed on what is essentially a university basis, the director receiving a salary sufficient to free him from many of the anxieties of life and to relieve him, more and more, from the necessity of practice for the support of himself and his family. Relatively adequate salaries have made it possible for younger men to devote valuable years of their life to the study of special problems, or, as assistants in scientific or clinical departments, to acquire that experience which may qualify them for consulting practice, for clinical teaching, or for the direction of others in scientific research.

Materially, in buildings and equipment, our schools of medicine are second to none. Through the generosity of individuals and foundations for the furtherance of good works, laboratories and institutes have been established in and outside of the university, the scientific contributions of which are recognized throughout the world. The amount of scientific work done not only in institutes for research, but also in our schools of medicine, is really considerable. The volume of this work becomes more impressive when one considers the serious monthly medical publications of thirty years ago and today. In 1903, the *American Journal of Medical Sciences*, the *Journal of Experimental Medicine*, the *Journal of Medical Research*, the *American Journal of Physiology*, the *American Journal of Anatomy*, which had just begun its career, and a few other special magazines were the only serious American agencies for the publication *in extenso* of original investigations. Think of the amount of really good original work which appears today in the special publications of this Association alone.

The day has already come when students from the old world are turning to our universities and our laboratories as for years we have turned to theirs—a happy omen.

At the same time, an earnest effort has been made to raise the standards for admission to our schools of medicine. With the advances in medical knowledge and the increased application of the natural sciences, such as chemistry and physics, to the problems of physiology, normal and pathologic, the student of medicine must have not only a wider general education, but a more thorough understanding of the natural sciences. Some of our universities demand a degree of Bachelor of Arts or Science for admission to the school of medicine. Minimal requirements for admission to the approved schools of medicine have, for many years, been insisted on by the Council on Medical Education, requirements which demand a four years high school course and at least two years of premedical study in a college or university, in which special stress is laid on chemistry, physics, biology and English; a reading knowledge of one foreign language is strongly urged. The necessity of adequate clinical experience is more generally recognized. Such experience in the wards of the hospital during the undergraduate period, offered in but few schools thirty years ago, is now general, and eleven schools demand a fifth or clinical year. City and state hospitals are recognizing that their efficiency is increased and their reputation enhanced by opening their doors to university teachers and students, and university units for teaching and investigation in public institutions are no longer uncommon.

Sixteen states demand a year's experience as clinical intern in more or less carefully designated hospitals before granting an application for a licence to practise. More and more, state examiners are emphasizing practical tests of clinical ability; this is notably true of the admirable work of the National Examining Board.

It is really interesting to consider how much of Billings's program, if one may so call it, has already been realized:

The elimination of proprietary schools and the change in character of those which remain.

The almost universal relegation of preclinical instruction to salaried professors who give their entire time to teaching and investigation.

The widespread assumption of medical teaching by universities.

The building of university hospitals.

The affiliation of private hospitals with universities.

The organization of such hospitals on what might be called a university basis, in the sense of the centralization of responsibility and the giving of adequate salaries to the directors of clinical departments.

The establishment of university units in general hospitals.

The multiplication of endowed professorships, laboratories and institutes of research.

The adoption of higher standards of admission to schools of medicine.

The improvement of the character of state examinations for a licence to practise medicine, and the more general reciprocity between state examining boards.

The work of the National Examining Board.

Brilliant contributions to science and therapy have come from the laboratories and clinics of the medical departments of universities.

One need but mention:

The information we have gained on problems of metabolism in general.

The addition to our knowledge of food values and vitamins in relation, for instance, to rickets, pellagra, beriberi, xerophthalmia and the anemias.

The numerous contributions to our knowledge of the internal secretions of pituitary, thyroid, parathyroid, pancreas, adrenals, ovaries.

The brilliant therapeutic effects of insulin in diabetes, of liver extract and ventriculin in pernicious anemia.

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[2] Flexner, Abraham: Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching, New York, 1910.

The isolation of epinephrine, insulin, thyroxine.

Our steady progress in the comprehension of infectious processes in general.

These are but a few of the discoveries that are flowing from university schools of medicine.

There are, of course, critics of the modern tendencies in medical instruction—on the one hand, those who question the fundamental soundness of the methods themselves, and on the other hand, those who criticize the wisdom and efficacy with which we have administered or carried out our program.

Among the former group there have always been those who feel that we are attempting too much, who "point with alarm" to the diminishing number of country practitioners, and assert that it is difficult to conceive that a man with so good a general education as the medical graduate of today would willingly live the life which was led in the past by him who served the country community in the days of our fathers. These men earnestly ask whether we should not have simpler schools with a shorter course and less severe requirements to provide doctors of a simpler class for such communities.

And then there are the others who feel that with the increased demands for admission to schools of medicine too many men with qualities which might easily admit of their becoming useful practitioners are definitely shut out from a medical career because of their lack of means.

While I respect the sincerity with which both of these objections are often made, I cannot feel that they need serious consideration. In the first place, in many regions improved means of communication have made good medical attention available as never before. In distant rural districts the remedy is surely not to be sought by providing inferior men.

These are problems which must be considered and met by community, county and state. The medical profession will be found ready, as it always has been, to do its share. The occasional local controversies between physicians, individual and in bodies, private charitable foundations and state agencies are deplorable for the moment, but usually settle themselves in the end for the public good, for the very simple reason that, at heart, all are working toward the same end.

The second fundamental objection is one which always excites one's sympathy. Who can tell what boy, had he had every advantage, might have accomplished great things? All that we can do is to support the best possible system of schools, to offer the best opportunities we can. Nothing which we can do can prevent boys improperly educated from desiring to study medicine when it is too late. Nothing can prevent the occasional heartburnings. It is clear today that preparation for medicine demands a more thorough and careful education than has been given in the past. This is really not a matter for dispute. That this is not understood by the public at large is sad, but to a certain extent inevitable. In our public schools proper opportunities should be open to those able to avail themselves of them.

This great reorganization, for such it really is, of our methods of medical instruction, has, of itself, naturally given rise to new problems, a few of principle, many of detail.

Some of these relate to the teaching of the preclinical subjects. In the old days the instruction in anatomy and physiology, in the hands of men who were active practitioners, was very largely of an applied or practical character, the instructor having in mind, mainly, the relations between the established truths or accepted hypotheses which he was demonstrating, and the practice of surgery or medicine. Today the professor of physiology or of anatomy is generally a student and investigator working or directing work on scientific problems. Not infrequently such a man does not even hold a medical degree.

The first two years of the instruction in the modern medical school is given largely to anatomy, physiology, chemistry and perhaps pharmacology. When the student begins his studies of diagnosis, medical and surgical, his ideas of topographic and applied anatomy are vague. When, in the laboratory, he studied the tendons of the wrist, he had little thought of the application of this knowledge to surgical practice; when he begins, clinically, to examine the blood, not only is the procedure new but the histology itself comes to him almost as a new subject. When in connection with the study of pathologic changes of function, the student begins to consider physiologic problems in the human being, the relationship of that which he has observed in the laboratory on animals a year previously is by no means always clear.

The criticism is common that teaching of applied anatomy and physiology is neglected in the preclinical departments, that the professors of anatomy and physiology should always be surgeons or physicians, and that, in a medical school, instruction in anatomy and physiology should be carried on from the outset with an eye to their relation to medical and surgical problems.

There is truth in the assertion that the division between the abstract scientific and the applied clinical teaching is too sharp in most of our schools. I hope that one day this may be remedied. It seems to me, however, that the remedy lies not in changing the character of our departments of anatomy and physiology but in better cooperation. The teaching of topographic and applied anatomy and of applied physiology, such, for instance, as the demonstration of the percussion of the outlines of organs in the living human being, of the methods of appreciating the respiratory sounds or those produced in the cardiovascular apparatus and their physical explanation, are not, and should no longer be regarded as the duty of the anatomic or physiologic department. They should be taught by the clinical departments in closer cooperation with instruction in the preclinical branches than they now are. The day must come when, in well-ordered schools, study of the anatomy of the heart and lungs may be accompanied by the demonstration to the student of methods of determining these things clinically; when, for instance, in association with the consideration of the physiology of the respiration, the physics of the circulation and the character of the heart sounds, the student may make use of the ordinary clinical procedures by which we explore these functions. There are opportunities here for better cooperation.

I am not, however, in sympathy with those who would turn back to the old methods of teaching anatomy and physiology as purely applied sciences. One of our main objects should be to impress on the student that the clinician must reason for himself in a scientific fashion. The instruction in the preclinical branches in the modern university school should be carried on in such fashion as to exemplify Lowell's wise expression:

"self-education under guidance." President Ames[3] has well said:

> The primary duty of the university to a student is to provide such instructors that he is made to realize that the responsibility for progress is his own, no one else's. He must receive a certain amount of fundamental instruction; he must be given the technique of his field of study, he must be allowed to secure his information by himself, and largely in his own way; he must learn to look upon his field as one which has no limits and in which he must walk alone; . . .

These lessons should be inculcated from the very beginning of the student's medical instruction. Mall was one of the greatest teachers that I have known; but in his lifetime a common criticism of Mall was that he did not teach. He did teach anatomy as a science. He taught his students to stand on their own feet and think with their own heads. At the same time his laboratory and his material were always wholly at the service of the medical and surgical departments on which, properly, it seems to me, lies the duty of the teaching of applied anatomy and physiology.

I am not inclined to feel that it is in any sense necessary for a professor of anatomy or physiology to be the holder of a degree of Doctor of Medicine, although I believe it to be wiser and better that he should. The intelligent man who has been through a regular medical course certainly loses nothing by it, and gains a better appreciation of the problems which his students are to confront later in life.

I am therefore not in sympathy with those who criticize fundamentally the teaching of anatomy and physiology by men who are not Doctors of Medicine. While, other things being equal, a medical degree is desirable, it is not the degree that is important, it is the man. That the professor should be an unselfish, scholarly investigator with a human interest in his students and the capacity of stimulating them in their work—that is the essential point.

There has been a good deal of criticism of the idea of the university school of medicine based on the assumption that the teaching of the clinical branches may be too exclusively delegated to men who are rather investigators than clinicians, and that, in university schools, there has been a tendency to appoint to clinical professorships young men of scientific enthusiasm who have not had the experience necessary to give them a sufficient competence in their clinical methods; that these men, in some instances, have been so far overwhelmed by their administrative duties that, with a relatively small clinic, and deprived of the constant association with their colleagues which comes to the active consultant, they have failed to acquire the clinical skill and authority which is desirable. It has been urged that, in some university schools and hospitals, the opportunities in the way of beds and ward service for those clinical associates who should be called on in the teaching, opportunities which are necessary for the construction of an adequate teaching staff, have been deficient.

There has been, here and there, some justification for such criticism. It has not always been recognized, as it should be, that a well balanced staff, which should include a group of the best clinicians in the community, is quite necessary for the university school of medicine.

There have been institutions which have started with clinical advantages so limited as to provide only for the kernel of the university staff. This, as I have pointed out elsewhere,[4] has resulted in putting on younger and less trained members of the university staff, clinical duties which they were not yet qualified to fill, duties which have, at times, placed on them so great a burden as to interfere seriously with the opportunities to round out their own clinical experience in an orderly fashion and without undue strain.

Again, sometimes, professors appointed too early to positions of heavy administrative responsibility have developed into administrators rather than physicians, teachers or investigators, and a few classes of students have suffered from lack of adequate clinical instruction.

But only Pallas Athene sprang perfect from the head of Zeus. Perfection is not of man. Man's creations ripen slowly and, as man and his surroundings are ever changing, the plan which we devise for tomorrow is already incomplete by the time it is put into effect. Most criticisms that have been made of the university school of medicine have to do with defects of detail, not of principle, and where errors have been recognized they are being corrected.

The placing of the responsibility for the direction of the clinical branches on university professors whose main interest is in the development of their departments has been an unmixed blessing. The necessity for an adequate clinical staff in the university medical school is becoming generally recognized. Such a staff is far better selected by a university professor than it used to be when it flowed automatically through channels walled in by rigid rules of seniority and order of progression.

There is still room for better cooperation between university and public and private foundations in the establishment of university clinical units in general hospitals. But general hospitals are rapidly coming to realize the value of the university unit to the public, and it will not be many years before our city, state and private institutions are as generally utilized for medical instruction in this country as they are on the continent of Europe.

A criticism occasionally made of modern medical instruction is that the multiplicity and refinements of newer diagnostic methods have brought it about that the systematic teaching of the simpler procedures of physical diagnosis by experienced men has been somewhat neglected. The basis of the diagnostic art lies in the ability of the practitioner to use his five senses and properly to reason on his observations. Accurate training in those clinical procedures which can be practised without instruments or with such simple instruments as those used in auscultation and percussion, and in the ordinary routine examination of eyes, ears, throat, blood, and of the secreta and excreta, is fundamental. The art of using one's eyes and ears and hands skilfully, and of reasoning intelligently on the information so gained, the art of physical diagnosis in the stricter sense, can be attained only by the efforts and experience of the individual; it cannot be gained by reading books or listening to lectures. But it is not likely to be attained by the individual without assistance; it is not likely to be attained unless the student is, to a considerable extent, guided by teachers who, themselves, are adepts. In these days of more or less necessary specialization, the physician whose main interest lies in the chemical or bacteriologic or serologic problems of pathology—I use the word in its proper sense of the study of disease, not pathologic anatomy—is not likely to be a skilled physical diagnostician as well. It is important, necessary indeed, that the student should be led into his study of physical diagnosis by experienced and expert diagnosticians. Such training requires considerable time. This is a part of the medical curriculum which cannot be restricted. In like manner the simple laboratory methods referred to above, methods with the technique of which every physician must be thoroughly at home, cannot be taught by demonstration. The student must practise them himself under the observation and control of experienced teachers and should be required to satisfy his examiners of his thorough familiarity with them.[5]

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[3] Ames, Joseph S.: Address on Commemoration Day, Feb. 22, 1932, to appear in Johns Hopkins Alumni Magazine, 1932, vol. 20.

[4] Thayer, W. S.: Remarks on the Occasion of the Dedication of the Colorado General Hospital and School of Medicine on Jan. 23, 1925, Colorado Med. **22**: 158, 1925.

The teaching of physical diagnosis is not merely a question of the inculcation of a technique; the student should be led systematically to work out for himself the diagnosis of each one of the important pulmonary and cardiac lesions from signs observed by him or elicited by his technical skill in auscultation and percussion and interpreted by sound physical reasoning on the basis of his own pathologic knowledge.

It may be true that in some modern schools this fundamental training has been somewhat neglected because of the multiplicity of newer diagnostic refinements the application of which is easy and convenient in the university hospital but difficult in private practice. Important as these refinements may be, they are but complementary to the information gained by a thorough physical examination, and valueless to him who cannot stand on his own feet. Every graduate of medicine should be adept in the art of physical diagnosis and at home with the simpler laboratory technique.

A criticism of American medical teaching which is not uncommon is that we are bound too closely by rigid curricula. In the continental universities the student approaches medicine in an atmosphere of freedom. He is not hampered by the necessity of following his course in a class which is subjected to examinations at stated intervals, which flows through the school, as it were, in a stated number of years, with which he must keep pace under the penalty of being obliged to abandon medicine—for it is almost this. While the amount of work which he must do is prescribed, yet he may pursue his studies as deliberately as he will. With us he is treated almost as a schoolboy and must pass, in a prescribed period, through a prescribed course. This has seemed to some[6] unfortunate, and many have looked forward to the day when the student may take his time, passing from school to school as he will, and pursuing his course under such instructors as he may choose.

This has not been possible in the past, owing, largely, to the lack of standardization of our schools, and because in many, with the limited clinical advantages, the class system is necessary, for the size of classes must be limited. Gradually this, too, is changing, and already, among the better schools of medicine, men in good standing find it easier to move from school to school; but it has not been possible as yet to abandon the class system. Another defect of the class system is that, with a four years course, it is quite impossible to cover so large a part of the field of medicine as one would. It is a pity that, if the student so desires, he may not spend a longer period as an undergraduate and give more time to the study of special branches of medicine or surgery before taking his degree. In a four years course, however, we can offer opportunities to acquire a good basis only in the main branches of medicine, and, as it is impossible to give more than a smattering of instruction in *all* the special branches, there must be a good deal of elective freedom. In some schools this has been extended to a considerable degree.

Interestingly enough, the response of students to this increased elective freedom has brought home to some observers the relative immaturity of our students, and has impressed on them the realization that, with our present premedical requirements, the student who enters even our better schools, is, very often, at a stage of educational and mental development in which he needs careful guidance and advice as to the character and sequence of the courses which he selects.

This has been emphasized by Rich[7] who wisely, points to the deplorable lack of significance of our American A.B. and S.B. degrees which are accepted as qualification for admission to some schools. We have been in the habit of assuming that he who has the degree of A.B. is necessarily an individual with the basis of a liberal education, and of a maturity which should enable him to plan his course in life with assurance.

Too often he is rather immature, commonly with an imperfect grasp even of his own language; frequently he has not yet learned how to work and is sadly in need of guidance. This is due to two main circumstances: First, in the words of Flexner,[8] "Intellectually and culturally we are not on a par with older nations, and we could not possibly be." The proportion of young people who have been brought up in an atmosphere of culture and scholarship is much smaller here than in England and France.

Second, the standards of our teaching in primary and secondary grades are below those of European schools. How many of us in this hall were taught in our early years by scholars?

The change will come with time, but, at the moment, we have to do in our universities with boys considerably less mature than those of the same age in Britain or on the continent. Self assurance is sometimes an evidence of youth. "Sophistication is not education."[9] We may like to think of them as men qualified to plan and choose their own course. Often they are not. Many need not only guidance, but supervision.

When the time arrives that secondary teaching becomes recognized with us as a dignified career commanding a proper stipend; when, in our public and private schools, our boys begin to come under the influence of scholars whose heart is in their work, rather than young men and women teaching more or less up to the limits of their knowledge, then the change will begin—and not until then.

In the meantime, without abandoning our ideals, we must recognize existing conditions. I agree with Rich in feeling that, while giving to our students so much liberty as is possible, we should not fail to see to it that they are carefully advised and guided through the too short years of their undergraduate study.

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[5] No student should be allowed to graduate who is not skilled in the preparation of, and familiar with the examination of, specimens of fresh blood—a procedure as simple as it is important, an essential part of the initial examination of every patient, which can be carried out at the bedside or in the consulting-room in a few minutes; a procedure which is almost forgotten in some modern clinics.

[6] Thayer, W. S.: Observations on the Teaching of Clinical Medicine, St. Louis M. Rev. **56**: 37, 1907; Proc. A. Am. M. Coll. **17**: 101, 1907.

[7] Rich, A. R.: Reflections on the Relation of the Curriculum to Certain Problems in Medical Education, Bull. Johns Hopkins Hosp. **49**: 121, 1931.

[8] Flexner, Abraham: Failings of Our Graduate Schools, Atlantic Monthly **149**: 441, 1932.

[9] Rutledge, B. H.: In conversation.

Further, it is extremely important that in selecting university professors we remember that while occasionally a berth must be reserved for the rare student and investigator who needs protection and, as it were, an asylum in which to pursue his exceptional research, yet, in most instances, the abilities of the candidate as an inspirer and a leader of men, as a teacher in the best sense of the word, his character and his personality should never be forgotten. Not for his discoveries or his publications alone should a man be made a professor of medicine.

Perhaps I may be forgiven for speaking here of another element which is commonly deficient in the education of most American students of medicine. This carries us again outside of medical teaching proper, back to the common school. I shall, however, try to show that it has an influence on the capacity of the student to make the most of his opportunities in the school of medicine as well as in his broader human relations. I refer to the imperfect training of our youth in ancient and modern languages. I may approach the question from a standpoint which will seem to some to be far-fetched.

The better American medical literature has, in the past, been especially notable for its freedom from Chauvinism and from those odious and petty and childish quibbles as to priority which are so common in some communities. This happy characteristic of our literature has, I think, been in part due to the beneficent influence of the Surgeon General's Library with its *Index Catalogue* and the allied *Index Medicus*. We have usually been familiar with the literature, and we have given credit to foreign authors.

There has been another influence which has helped to bring this about, namely, that so large a body of young men who, later, have become productive students, have spent considerable periods of time in European universities and hospitals, thereby acquiring familiarity with foreign languages and literature, and, especially, forming close and cordial relations with their European and Asiatic confrères. The number of American medical students in continental universities has been traditionally large. To the student of medicine the chief value of a sojourn in foreign clinics is, precisely, the familiarity which he acquires with the language, the characteristics, the habits and the point of view of other peoples, and the personal acquaintance with foreigners who have like scientific or artistic interests.

But a few years ago the opportunities in clinic and in laboratory in the great European centers were so much better than in this country that it was highly desirable, if not necessary, from the standpoint of the scientific advantages alone, for the American student to seek the benefits of foreign study. Today, in a general way, these opportunities are as great here as in Europe, and while many American students travel, a relatively large proportion of them spend so short a time abroad that they fail to gain that familiarity with European methods and languages which was acquired by the fortunate few in the past. The number of young American medical men who come back steeped in the traditions of the continental centers, and with the foundations of lifelong friendships, is relatively smaller than it was forty or fifty years ago. This is not as yet offset by the gratifying number of foreign post-graduate students who are seeking our clinics and laboratories. These international social relations between medical men are of more than mere medical value. International professional relationships play a real part in bringing closer together the peoples of the world.

Is it not, then, important that we should bear in mind the value of international cooperation in medicine, that we should make every effort in our schools and colleges, that he who is preparing for the study of medicine may acquire a better linguistic foundation? Ought we not to look to it that the circumstance that our standards of medical education are higher, and that important original investigations are being carried on in many centers in this country shall not lead us to a subconscious sense of independence of the work done by our colleagues on other continents? Should we not make every effort to insist on a knowledge of French and German, to impress on the student the desirability of cooperation with workers in other countries, the value of the establishment of direct relations with them and the duty of familiarity with and recognition of their work?

The barrier of language is a sad hindrance to progress; it is, alas, responsible for many of our international misunderstandings, personal, political, scientific. Most men have much in common. When we meet and commune freely, one with another, we quickly find points of contact, and very often conceive a sincere admiration for those elements of special excellence which we are sure to discover in our neighbor. Fatally separated by the barrier of language, we are very likely to be as jealous and suspicious as dogs—for men are singularly like dogs. The serious student of medicine should be able to read, in the original, the important literature and textbooks in French, German and English.

Is not this largely provided for by the higher requirements for admission to our medical schools? Is it not true that far more students read French and German today than in 1903? Do not the requirements to enter a good college or university "insure a sufficient knowledge of the ordinary school branches and also Latin or Greek?" Alas, I fear that this is far from true.

The currents and countercurrents in modern education are baffling. Along with the improvement of our schools of medicine and the increased cultivation of the natural sciences, there has been in this country and, to a considerable extent in other countries, a remarkable neglect of the teaching of languages in the early school years. This is not the place to enter into a discourse on the teaching of language, but it may not be out of the way to observe that from fifty to seventy-five years ago the early teaching of the classics, especially Latin, supplied to those who sought a good general education, as it does in the better European schools today, that fundamental understanding of grammatical principles which went so far toward improving their comprehension of the niceties of the mother tongue, quite apart from its cultural value in other respects.

An early familiarity with the classics, acquired in his youth, gave the student of the middle of the last century an innate sense of the significance of those roots on which, for convenience's sake, is based our entire scientific terminology, precisely in order to make it more comprehensible. For at that time and for many centuries a certain acquaintance with Latin and Greek was the common possession of all educated men. To the boy who studied the classics, especially Latin, early in his career, the study of English grammar was unnecessary and superfluous. I remember well my mother's surprise and indignation when she found that, at a little private school to which I was sent fifty-eight years ago, instead of beginning the study of Latin I was to be taught English grammar. By the young languages are acquired naturally and easily. The early study of Latin is the very best way to improve one's English and to make easy the comprehension and acquisition of foreign languages, especially the Romance languages. Latin, properly taught, is not a dead language.

Within a few generations the teaching of the classics has been so far abandoned in this country that it is really difficult, if not impossible, to find suitable teachers for many schools in which Latin and Greek are still taught.

The abandonment of the classics is, probably, in considerable part responsible for the relative immaturity of the American youth of today; it has led to some amusing manifestations. Ignorant of the classics, unaware that Latin was but yesterday the common language of science, confused by scientific terminology, worthy men[10] now and then call for its simplification, suggesting that scientific terms be translated into the vernacular. At the same time, annoyed by their incomprehension of foreign tongues, when they seek to read the works of others, they propose, in bland and blessed innocence, the re-creation of that which their fathers threw away, a common language of science.[11] In two generations we have come full circle!

It may be paradoxical but it is true that along with our increased self-sufficiency from a medical standpoint, with the abandonment of the fundamental teaching of the classics, with the increasing nationalism which has followed the World War, the ability to read French and German which has always been required of students in the school of medicine with which I am connected has become less general. Thirty years ago the only textbook which I used in one of my courses was a German work which had never been translated into English. This would scarcely be possible today. Whatever our attitude may be toward the teaching of the classics, it is of the greatest importance that we insist on a reading knowledge of French and German in our students.

With regard to the classics: As one whose fundamental classical education was but mediocre, but as one who has associated from boyhood with those whose classical foundation was good; as one who has lived in a period in which the classics are sadly neglected in our public, as well as in most of our private schools, I have no hesitation in saying that in my opinion the early study of the classics under scholarly teachers is time saved, not time wasted, for one who would have a good general education; there is no better mental training, and the introduction, through the classics, to the history and traditions of European civilization is of unique cultural value.

There is no training better for him who is to pursue a scientific career than that which leads to the early acquisition of the rules which govern the grammatical construction of Latin and Greek and, secondarily, of our own tongue. The neglect of the classics has not improved the use of English by the present generation. Language is the mirror of thought.[12] He who is incapable of expressing his thoughts clearly is incapable of thinking clearly. Subtlety of thought and subtlety of language are one. "The man of science," says Clifford Allbutt, "ought best to know that style and matter can no more be dissociated than skin and bone; that if we write clumsily, loosely, or disjointedly our thoughts are accordingly."[13] Nothing has been substituted for the early study of the classics that takes its place from a disciplinary standpoint. No time need be lost. The basis of the understanding of language and the conceptions which go with it was, should be, and may easily be laid before the age at which the study of the natural sciences can profitably begin. It is very largely the early teaching of the classics and the early and careful attention given to language that distinguishes European secondary education from ours.

Here in America we shall have to begin again. There are few secondary schools in which the classics are adequately taught today, few universities in which the classics are taught other than as a subject for philological, historical, or archaeological research or for the training of teachers.

I should not be surprised to see the development before long, among secondary schools, of special centers in which more attention is given to the early and thorough teaching of the classics. I am inclined to think that training and discipline in language will become more generally recognized than it is today as a necessary requirement for him who is to enter on a scientific career.

Prompted by a consideration of the words of our dear friend and master, I have indulged in a few reflections on modern American medical education. We have seen how many of the reforms that he foresaw and advised have come to pass. May he who has played so large a part in this progress long be spared to guide us with his wise counsel!

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[10] Within a few months an amusing editorial on this subject appeared in one of the leading New York daily papers. The writer seriously complained of the barbarous and incomprehensible terminology of medicine.

[11] In the Baltimore Sun of Feb. 20, 1932, there was an item with a rather flaring headline, "Universal Language Discussed," in which the statement is made that Dr. Alfred D. Flinn, director of the Engineering Foundation of New York City, "in a recent 'Research Narrative' of that organization" has set forth "specifications for a new universal language for scientific, political and business purposes. . . . The sounds of the new language should be easily learned by either children or adults, by personal instruction or by mechanical aids such as sound pictures or phonograph records. Grammatical forms should be simple and uniform. . . . Exactness and clarity are the chief necessities, leaving to existing languages the expression of emotions in poetry, literature and drama. . . . One specification yet to be decided, Dr. Flinn tells, is how low a level of average intelligence the new language needs to fit."

[12] Compare with the maxim of Publius Syrus. "Sermo animi est imago: qualis vir, talis et oratio est." Phaedri, Augusti Liberti, Fabulae Aesopiae ex optimis exemplaribus emendatae, accedunt Aviani et anonymi veteris fabulae. Publii Syri sententiae, etc. Argentorati, ex typ. societatis Bipontinae, MDCCCX, p. 193, line 848.

Also Seneca, Lucius Annaeus. "Imago animi sermo est; qualis est vir, talis oratio." Proverbia de moribus secundum ordinem alphabeti, Paris, Georges Mittelhus, Circa 1487.

[13] Allbutt, T. Clifford: Notes on the Composition of Scientific Papers, London, The Macmillan Company, 1905.

Proposed Postulates for Filtrable Bacteria.—In order to truly demonstrate the principle of a cycle between filtrable and nonfiltrable—or, more exactly, large and minute forms of a morphological cycle, we would set up the following postulates: (1) It must be possible to filter a suspension of a well defined pure culture of bacteria through a filter which holds back the characteristic forms; and these original forms should not appear in the filtrate or in cultures made with adequate amounts of the filtrate on suitable media after incubation of at least two or three weeks. (2) There must be evidence of growth of some kind in cultures made of this filtrate, but without evidence of the presence of the original normal forms. (3) The culture of the filtrable or minute form must be carried in a series of several generations. (4) It must be possible to recover the normal forms from such successive "filtrable attributes." Such requirements have not, as far as we know, been fulfilled by Mellon, by Rosenow or by Kendall, who are among the chief protagonists of the existence of filtrable stages. They have been reported, we believe, only by Hadley, who gives details in regard to his Shiga bacillus filtration, but this work has not yet been sufficiently confirmed.—Zinsser, Hans: On Postulates of Proof in Problems of the Bacterial Life Cycle, *Science* **75**:256 (March 4) 1932.

PAINFUL ANEURYSMS OF THE AORTIC ARCH

RELIEF BY PARAVERTEBRAL INJECTIONS OF PROCAINE AND ALCOHOL

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Aneurysm of the arch of the aorta, when it begins to erode the sternum and to compress the structures at the apex of the thorax, may give rise to excruciating pain. It is then a most distressing condition and one which the physician has been able to do very little to alleviate. Mere palliation of this agonizing pain gives the greatest comfort to these sufferers. But patients in the terminal stages of aortitis are no candidates for radical neurosurgery, so that any surgical intervention must involve the minimum operative shock. Such cases probably constitute as poor operative risks as advanced cases of angina pectoris. The statistics of cervical sympathectomy in the latter condition reported by Fontaine[1] and Cutler[2] show a mortality of from 8 to 21 per cent. On the other hand, paravertebral injection of the upper thoracic sympathetic ganglions, first described by Mandl[3] and further developed by Swetlow,[4] White,[5] Woodbridge[6] and others, has recorded to date a series of more than 100 cases with no mortality and very satisfactory results. I[7] have felt from the beginning that the fundamental effect of this procedure was the blocking of afferent painful pathways. With an experience in twenty-five cases of angina pectoris and believing that the nerve supply of the aortic arch is very similar to that of the heart, it was a natural step for me to try the effect of paravertebral injection in cases of painful aneurysm.

I[7] have recently reviewed the anatomy of the pain pathways from the heart and upper aorta. Briefly, afferent impulses leaving the heart and proximal aorta may follow two different routes: they may either ascend the middle and lower cardiac nerves to the corresponding cervical sympathetic ganglions, whence they descend in the sympathetic trunk to the upper dorsal ganglions, or run directly across the posterior mediastinum to these same ganglions. Thence the impulses traverse the white rami communicantes to enter the dorsal root ganglions of the upper thoracic spinal nerves. From this point, according to the theories of Head and Mackenzie, conscious pain is referred to the corresponding dermatomes and carried to the sensorium over somatic afferent pathways. It is therefore evident that the most accessible point at which these visceral pathways can be successfully blocked is the upper dorsal sympathetic ganglions or their white rami.

Surgical experience has shown that cutting the vagi or the intercostal nerves has no effect on cardiac pain, and also that removal of the entire cervical sympathetic trunk is frequently ineffective. On the other hand, resection of the upper thoracic ganglions has been uniformly successful in four cases reported from this clinic;[7] and in each case in which objective evidence has shown a successful injection of these structures, the pain of angina pectoris has disappeared.

Evidence acquired by the application of paravertebral alcohol block to three cases of painful aortic aneurysms has shown it to be effective. In reporting these cases I shall not attempt to detail the method of paravertebral injection, which is explained in Labat's textbook[8] and in the papers already referred to. It would be well, however, to mention the value of preliminary injections with procaine, to determine which segments carry the painful stimuli, prior to the injection of alcohol. Diagnostic injection of the sympathetic rami and ganglions with procaine, as described elsewhere,[9] has proved to be of the greatest value in this condition, as the pain was referred over a large number of dermatomes and yet could be blocked by infiltrating only the upper two thoracic ganglions and their communicant rami. In each instance there was an immediate cessation of pain, and injection of alcohol was therefore limited to these two segments.

REPORT OF CASES

Case 1.—James E. B., aged 48, a native American railroad conductor, contracted a penile chancre in 1901. He had no treatment until 1926, when he first noticed pain in his right shoulder and dyspnea on exertion. A Wassermann test of the blood was then strongly positive. Physical examination showed his heart to be enlarged to the left and downward. There was a loud systolic murmur at the base, transmitted into his neck, as well as loud systolic and diastolic murmurs at the apex. The ascending aorta was expanded into a large aneurysm, with some dilatation of the innominate artery as well.

Subsequent to this examination he was followed in the outpatient department and treated with potassium iodide, quinine bismuth iodide, and mercurial ointment. He found lighter work as a railroad clerk and felt well until June, 1929. He then began to be troubled by palpitation on exertion and periods of syncope. Three weeks before his admission in January, 1930, he caught cold and developed a dry hacking cough. A week later he began to suffer extremely from pain behind his right ear, running down his neck over the right shoulder and upper part of the chest. This pain was constant and burning in character and became intolerably severe when he coughed. His cough became dry, nonproductive and brassy.

The patient was obese, with a cyanotic, swollen face. There was a bulging pulsating tumor rising above the right side of the manubrium and the medial half of the clavicle. The heart conditions were similar to those at his previous examination. The right radial pulse was greatly diminished, and blood pressure reading on the two sides showed a pressure of 85 systolic and 70 diastolic on the right and 115/80 on the left. The Wassermann and Hinton tests of the blood continued strongly positive. Roentgen examination showed a great increase in the size of the aneurysm, which now involved the entire ascending aorta and the beginning of the great vessels (fig. 1).

Antisyphilitic measures having been pushed to the limit without relief, it was essential to do something to palliate the pain. The wide area over which this pain was referred is shown in figure 2. From this it is apparent that the segments involved extended from the first cervical to the third dorsal. As there were no previous reports in the literature, it was necessary to determine in the first place whether the painful impulses were transmitted over the cervical and upper dorsal spinal nerves, or whether they entered the cord through the

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From the Surgical Services of the Massachusetts General Hospital.

[1] Fontaine, R.: Les résultats actuels du traitment chirurgicale de l'angine de poitrine, Thèse de Strasbourg, 1925.

[2] Cutler, E. C.: Summary of Experience up to Date in the Surgical Treatment of Angina Pectoris, Am. J. M. Sc. **173**: 613 (May) 1927.

[3] Mandl, Felix: Die Wirkung der paravertebralen Injektion bei Angina Pectoris, Arch. f. klin. Chir. **136**: 495, 1925.

[4] Swetlow, G. I.: Paravertebral Block in Cardiac Pain, Am. Heart J. **1**: 393 (April) 1926.

[5] White, J. C., and White, P. D.: Angina Pectoris: Treatment with Paravertebral Alcohol Injections, J. A. M. A. **90**: 1099 (April 7) 1928. Mixter, W. J., and White, J. C.: Alcohol Injection in Angina Pectoris, Ann. Surg. **89**: 199 (Feb.) 1929. White, J. C.: Angina Pectoris: Relief of Pain by Paravertebral Alcohol Block of the Upper Dorsal Sympathetic Rami, Arch Neurol. & Psychiat. **22**: 302 (Aug.) 1929; Angina Pectoris: Treatment by Paravertebral Alcohol Injection or Operation Based on the Newer Concepts of Cardiac Innervation, Am. J. Surg. **9**: 98 (July) 1930.

[6] Woodbridge, P. D.: Therapeutic Nerve Block with Procaine and Alcohol, Am. J. Surg. **9**: 278 (Aug.) 1930.

[7] White, J. C.: The Cardio-Aortic Nerves, New England J. Med., to be published.

[8] Labat, Gaston: Regional Anesthesia, Philadelphia, W. B. Saunders Company, 1928.

[9] White, J. C.: Diagnostic Novocaine Block of the Sensory and Sympathetic Nerves, Am. J. Surg. **9**: 264 (Aug.) 1930.

sympathetic rami. In the former case laminectomy and section of multiple posterior roots would have been necessary, a procedure which the patient would obviously not have tolerated. On the other hand, if the pain traversed the sympathetic nerves, the point of entry into the spinal cord would be concentrated in the upper dorsal segments, as explained in the beginning of this article.

Feb. 7, 1929, diagnostic blocking of the first and second dorsal sympathetic ganglions clearly proved this to be the case by relieving his pain entirely for thirty-six hours. Five cubic centimeters of 95 per cent alcohol was then injected paravertebrally into each of these areas. This produced a small band of anesthesia reaching across the upper part of the back into the axilla, which disappeared in two weeks. There were no troublesome sequelae. The patient was totally relieved of all his pain and was discharged two weeks later.

He remained free from pain for four months. He then reentered the hospital decompensated and died suddenly of rupture of his aneurysm. An autopsy was performed and showed a huge aortic aneurysm which had ruptured anteriorly. Examination showed two small retropleural scars about 1.5 cm. in diameter. These surrounded the first and second intercostal nerves at their point of emergence from the intervertebral foramina, their communicant rami, and the corresponding sympathetic ganglions. While the intercostal nerves themselves and the ganglions did not show histologic evidence of degeneration, the communicant rami appeared to have been destroyed.

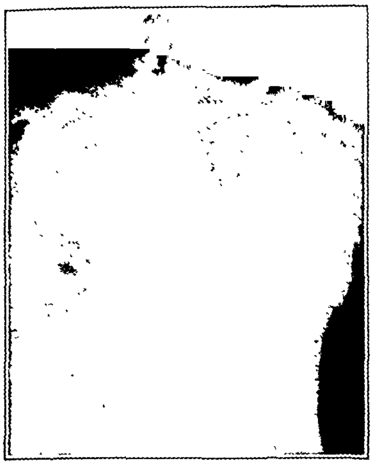

Fig. 1 (case 1).—Aneurysm which involved the ascending arch of the aorta and the origin of the great vessels in the neck.

Case 2.—Antonio C., aged 54, an Italian farmer, who had always considered himself well and strong, had, however, noticed a penile sore at 18, which had been treated only by local applications and pills. Seven months before admission he noticed a slight cough and then twinges of pain in the left side of the chest accompanying the cough. The pain shortly began to radiate down the inside of his left arm, to the left scapula, and both sides of the neck. During the past three months the pain increased to a steady discomfort over the regions noted. Three weeks before he had noticed a swelling of the upper left part of the chest, which became tender and sensitive to touch. He was brought in to the outpatient department, where a diagnosis was made of late syphilis with aneurysm of the transverse arch of the aorta. Local examination showed a large, bulging, pulsating mass, 7 cm. wide, just to the left of the upper sternum (fig. 3). There was a harsh systolic murmur over the tumor, but the heart itself was not enlarged and showed no evidence of valvular disease. Blood pressure in the right arm was 130 systolic and 86 diastolic and in the left 90/?. The patient also showed a well marked Horner's syndrome on the left side from pressure on the thoracic sympathetic fibers. There was no evidence of involvement of the central nervous system. Both the Hinton and Wassermann tests were strongly positive.

A roentgenogram of the patient's chest (fig. 4) showed the heart measurements to be within normal limits, but the supracardiac dulness was about twice the usual size. Lateral views showed a rounded mass in the region of the arch of the aorta, which showed true pulsation. The patient was observed in the ward for four days and suffered acutely and continuously from pain over the area described. This could be relieved only by one-fourth grain (0.016 Gm.) doses of morphine given at frequent intervals.

As no direct operative attack could be made on an aneurysm of this size and position, it was decided to do a procaine injection of the thoracic sympathetic fibers in order to determine whether it would be possible to relieve the pain by blocking these structures.

Oct. 22, 1930, paravertebral injection of procaine was done beneath the first and second ribs on the left side; 5 cc. of 2 per cent procaine epinephrine solution was injected against the vertebral bodies in the region of the vertebral foramina. This gave immediate relief from all pain and hyperesthesia in the painful area.

Much to our surprise, the pain failed to recur as the procaine was absorbed, so that at the end of a week the patient remained completely pain-free. He was discharged with the understanding that he was to have antisyphilitic treatment in the outpatient department and to reenter the hospital for alcohol injection if the pain returned. Following his discharge he reported complete relief for three weeks. Then for a period of two weeks the pain recurred. He was considering reentry for alcohol injection when the pain again disappeared spontaneously. He finally developed bronchopneumonia and died painlessly, Jan. 10, 1931, of a sudden hemorrhage following a coughing spell.

Prolonged relief of pain following simple procaine injection of the painful nerves has been reported on numerous occasions, notably by Mandl,[3] who uses this method as a routine for relief of angina pectoris. There have been several instances in this clinic of prolonged and severe visceral pain which have been completely relieved by procaine for long periods of time. Usually, however, the pain has recurred in from two to thirty-six hours, necessitating a second injection with alcohol.

Case 3.—Eric N. S., aged 37, a Swedish carpenter, stated that he had always enjoyed excellent health. Seventeen years before, while he was working as a seaman, he noticed a "red pimple" on the penis. This had appeared about three weeks after his last exposure to venereal infection. He then noticed a swollen gland in the right groin. The penile lesion was treated several times by the ship's captain with local applications. The patient felt bad for about a month but does not remember skin lesions or other sequelae.

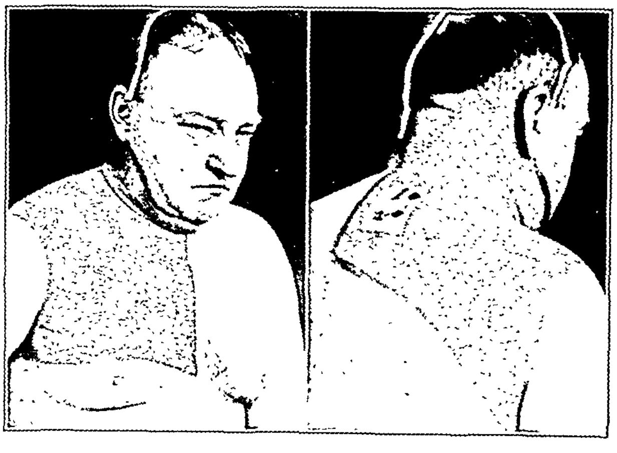

Fig. 2 (case 1).—Area of referred pain from aneurysm of ascending arch of aorta, and points of injection that gave relief.

In 1925 the patient came to the hospital complaining of cough, dyspnea on exertion, dysphagia and precordial pain of nine months' duration. These symptoms had appeared suddenly after a heavy blow on his left shoulder. Examination at this time showed only slight enlargement of the heart, but an increase in supracardiac dulness to 8.5 cm. Blood pressure could not be obtained in either arm, but in the popliteal space it was found to be 240 systolic and 170 diastolic. The Wassermann reaction was strongly positive. Roentgen examination revealed a supracardiac shadow 8 cm. in diameter, which displaced the trachea slightly to the left but did not pulsate. It did, however, appear to be continuous with the heart. The patient had a series of antisyphilitic treatments in the outpatient department for the next five years.

During the period after his first admission the patient had frequently been bothered by pain over the upper precordium, which extended occasionally to the axilla and into the neck on the left side. It was dull but increased on exertion. The palpitation and dyspnea improved considerably on antisyphilitic measures. During the past year, until two weeks before admission, the pain left him almost completely. Six months before, following a severe cold and cough, he noticed the development of a lump in the suprasternal area. Two weeks before admission another severe cough and cold came on, and the pain in the chest reappeared with great severity. For the first time he noticed hyperesthesia over the anterior left upper part of the chest associated with a sharp, burning, drawing pain in this region. Five days before admission the tumor at the upper end of the sternum enlarged considerably and became very tender.

The patient was well developed and well nourished, with flushed cheeks, he was apprehensive and in considerable pain. The heart was greatly enlarged to the left, and the supracardiac dulness measured 9 cm. The heart sounds were of poor quality, they were regular, and there was a soft, blowing systolic murmur over the whole precordium, heard best at the apex. There was also a loud to-and-fro murmur over the tender swelling in the upper sternum (fig. 5). Blood pressure could not be obtained in either arm. The left arm could not be abducted on account of the severe pain in the left clavicle and the left anterior side of the chest. A definite tracheal tug was made out and a diastolic shock over the tumor mass. Both the Hinton and the Wassermann reaction of the blood were still strongly positive, but there was no evidence that the central nervous system was involved. By roentgen examination the mass in the upper mediastinum showed a slight but distinct increase in size and appeared to pulsate slightly (fig. 6).

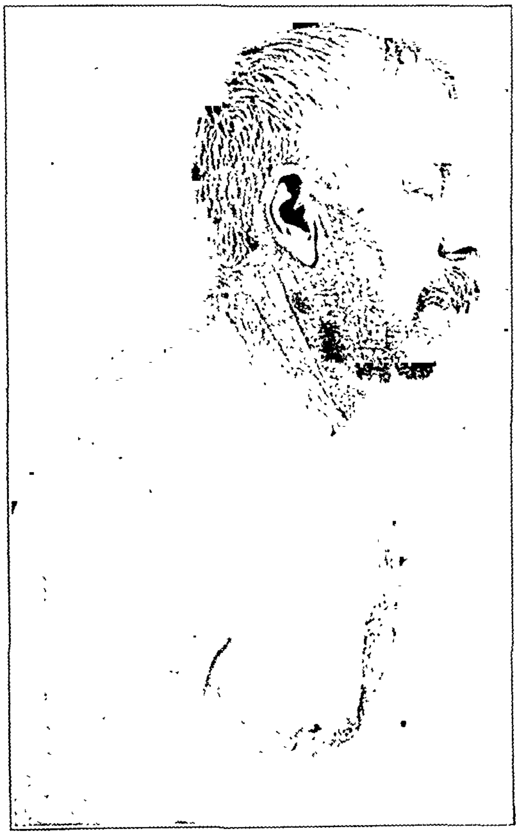

Fig. 3 (case 2).—Aneurysm of aortic arch eroding through the upper part of the sternum.

Dec. 4, 1930, paravertebral injection of procaine was given, followed by 5 cc. of 95 per cent alcohol in the region of the first and second thoracic vertebral foramina on the left side. This gave immediate and complete relief of the patient's pain and hyperesthesia, which has lasted to date, a period of twelve months. The patient has reported back to the clinic from time to time and has shown a gradual diminution in the size and pulsation of the substernal mass. Although he is still unable to work on account of dyspnea and easy fatigability, yet he has shown a marked improvement in his general condition and is extremely happy over the success of the injection treatment for the relief of his pain.

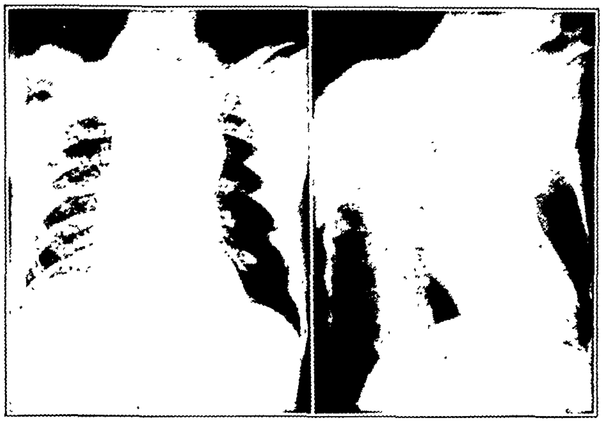

Fig. 4 (case 2).—Extent of aortic aneurysm.

COMMENT

In the three cases reported, the relief of intense suffering was highly satisfactory. In the two patients injected paravertebrally with alcohol, no further pain was noted; in the third, in whom procaine alone was used, pain totally disappeared for three weeks, recurring only in minor transitory attacks, so that a further injection with alcohol was never considered necessary. Why injections of procaine alone should give more than an hour or two's relief from visceral pain cannot be adequately explained, but Mandl[3] has reported relief of angina pectoris lasting for weeks and even months. After a successful injection of alcohol, the result seems to be permanent. I have a patient with angina pectoris who has gone for nearly five years without an attack on the injected left side, although he continues to have minor right-sided attacks, which have naturally not been affected by the injection of the sympathetic nerves on the left. In the third case reported, the patient remains well and free from pain at the end of a year.

That an accurate injection of these structures, which lie at a depth of from 5 to 8 cm., requires considerable technical skill goes without saying. The accuracy of the injection in the first case was shown by the final autopsy. The experience in these three cases would make paravertebral injection in aneurysm appear rather easier than in angina pectoris, probably because only two rami instead of four or five need to be injected. Another encouraging feature in this limited group of cases is that the rather general complaint of hyperesthesia of the overlying intercostal nerves, which has been a distinct annoyance in most of the angina cases following alcohol block, has been notably absent.

To digress from the purely clinical side of this paper, a point of much theoretical interest is that the mechanism of relief of pain in these cases must lie in the blocking of afferent pain pathways in the sympathetic system. Proponents of the theory that the sympathetic nervous system exerts primarily a motor influence on the viscera have frequently stated that blocking the sympathetic pathways in angina pectoris prevents the attacks by inhibiting vasospasm of the coronary arteries. No such possibility can be evoked here, where the pain of distention of the aneurysm and pressure on the surrounding viscera is of a constant, steady nature. Weiss and Davis[10] have shown that visceral pain can be relieved by infiltrating the skin segments to which that pain is referred. It might be felt that as the upper two intercostal nerves are anesthetized in this procedure, the cessation of the pain might be caused by blocking the somatic half of the viscerosensory reflex. This theory, however, is untenable, as the anesthesia of the intercostal nerves never lasts more than a few weeks.

CONCLUSION

I would like to emphasize that the paravertebral injection of alcohol is a poor substitute for sympathetic ganglionectomy in any patient who is a reasonably good operative risk, on account of the technical difficulty of jecting the alcohol with sufficient accuracy to be cer-in of destroying the ganglions or their communicant ami. However, in such cases as those reported, in which there are rapidly enlarging aneurysms, the dangers of cardiac decompensation, respiratory obstruction, or rupture of the aneurysm make a radical operation on the stellate and second dorsal ganglions quite out of the question. In these, however, paravertebral injection can be done with reasonable safety and a good chance of lasting relief of the chief complaint—pain. While actual prolongation of life is not to be expected from the relief of pain, it may be brought about indirectly by permitting the exhausted sufferer to rest and sleep in relative comfort.

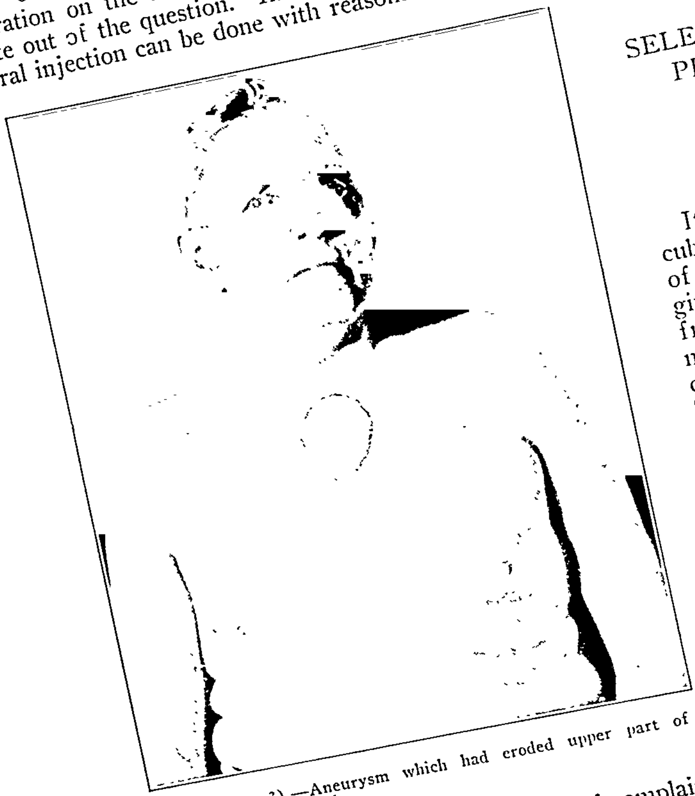
Fig. 5 (case 3).—Aneurysm which had eroded upper part of the sternum, marked by circle.

SUMMARY

1. In three cases reported, successful relief of pain was obtained in advanced aneurysms of the aortic arch.

2. The intense suffering that may occur in this condition, as well as the cardiac pain of angina pectoris, can be relieved by paravertebral injections of procaine or alcohol.

3. Procaine injection is of diagnostic value in determining which communicant rami transmit the painful impulses to the spinal cord. It may give relief over prolonged periods.

4. Alcohol, when accurately injected, causes permanent destruction of the sympathetic rami.

5. Sympathetic ganglionectomy, although a surer method of interrupting cardio-aortic pain pathways, is too serious an operative procedure to use in patients with large thoracic aneurysms. Paravertebral block, although technically a difficult procedure, is well tolerated and should give satisfactory results in a large percentage of cases.

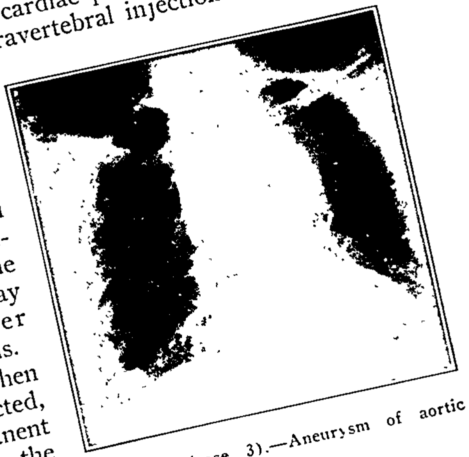
Fig. 6 (case 3).—Aneurysm of aortic arch.

SELECTIVE COLLAPSE OF LUNG WITH PHRENICOTOMY COMPARABLE TO THAT WITH PNEUMOTHORAX

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It is commonly appreciated that when a few hundred cubic centimeters of air is injected into the pleural space of persons with tuberculosis of one lung lobe, the slack given by the air to the elastic pull of the hemilung is frequently taken up more by the diseased than by the normal lobes, with the result that the air resides principally over the diseased lobe and collapses it selectively. The roentgenographic appearances in one of these cases are shown in figure 1. The exposure at *A* was made of the chest before induction of pneumothorax and demonstrates the presence of a tuberculous lesion lightly infiltrating the right upper lung field; that at *B* was made immediately after the last of a series of injections, which introduced 800 cc. of air and occupied ten days and shows marked collapse of the diseased portion of the lung without detectable deflation of the normal portion; and that at *C* was taken a few days later, after introduction of much more air, and demonstrates uniform and complete deflation of the hemilung. The phenomenon in reference is shown in the second roentgenogram and is termed selective collapse or selective pneumothorax.

Figure 2 is used to illustrate the principle of differential elasticity of the lung commonly believed to explain selective collapse after pneumothorax, so that certain comparisons can be made later. It shows three views of a rectangular frame which represents the walls of a hemithorax. Two rubber bands are stretched the width of the frame, to represent the upper and lower pulmonary lobes, being fixed directly to the frame on one (the left) side as lobes are fixed to the mediastinum, and being connected indirectly to the frame on the other side with bracket and cord, the bracket representing the lateral surface of the lung and the cord the pull of the intrapleural suction. The bands are the same length when completely relaxed but the upper band has the greater thickness and elastic tension; which circumstances imitate those of the pulmonary lobes when the upper one is tuberculous. The bracket has pivoted bars at each end, which serve for attachment of the bands and represent the lateral surfaces of the two lobes. The cord runs from the center of the bracket to the center of the frame's side, so that its pull is evenly balanced like that of the intrapleural suction. In the view at *A* the bracket is completely drawn to the frame in imitation of the situation in figure 1 *A*. At *B* the cord is released a little, and the result is that the upper band is much shortened while the lower one is scarcely shortened at all. This may be compared to the condition in figure 1 *B*. Further release of the cord, as shown at *C*, relaxes the bands completely and brings them to equal lengths. This is similar to the condition in figure 1 *C*.

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[10] Weiss, Soma, and Davis, D.: The Significance of the A Impulses from the Skin in the Mechanism of Visceral Pain, A M. Sc. **176:** 517 (Oct.) 1928.

Surgery, Peiping Union Medical College.

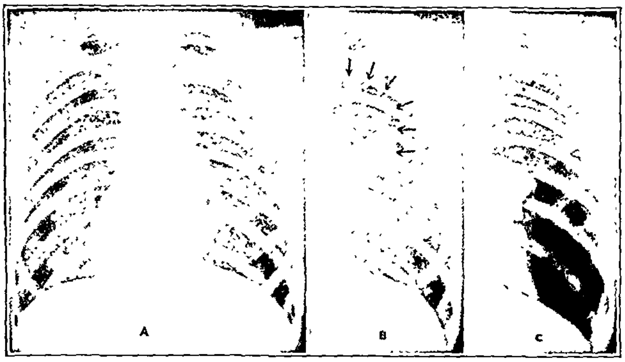

Fig. 1.—Appearance of lung in patient with tuberculosis involving the right upper lung field, in whom the diseased tissues collapsed selectively after pneumothorax: *A*, entire chest before pneumothorax; *B*, after injection of 800 cc. of air (arrows indicate selective collapse); *C*, after complete pneumothorax.

Several authors have called attention recently to the fact that after phrenicotomy for pulmonary tuberculosis the diseased part of the hemilung may be favorably affected regardless of its position; whereas it was the belief of those who first employed the treatment that it benefited only lesions situated in the lower lobes. Thus, O'Brien[1] found in a large series of cases that 46.6 per cent of tuberculous cavities in the upper lung field, 62.5 per cent of those in the middle field, and 80 per cent of those in the lower field were obliterated after phrenicotomy, and he commented as follows:

> It is possible that the smaller percentage of closures of cavities in the upper lung field was due to the fact that in this region the cavities, as a rule, are larger and have thicker walls than those found at the base. Cavities at the apex are often at the periphery of the lung with the walls of the cavity adherent to the wall of the chest, so that contraction of the elastic tissue of the lung has less tendency to cause their closure. The presence of adhesions over the whole lung surface is, of course, also a factor. It is my experience that similar lesions under favorable conditions will be equally affected by phrenicotomy whether they are located in the upper or lower lung fields.

R. C. Matson[2] found that

> the results of an induced hemidiaphragm paralysis are less dependent upon the site of the lesion than upon its type. This is explained by the fact that in certain types of tuberculosis, particularly in the proliferative varieties, the collapse capacity of the diseased lung tissue is greater than that of healthy lung tissue. Therefore, even though the lesion is in the upper lobe, the rising diaphragm, by reducing the volume of the hemithorax, permits the collapse capacity of the diseased lung tissue to exert itself, even without any collapse of healthy lung tissue.

To prove his statement this author presents roentgenograms of a case before and three years after phrenicotomy in which, at first, a very large cavity was present in the upper lobe and, at last, the cavity was absent and the upper lobe was densely fibrotic and extremely shrunken. The diaphragm was much higher in the second view, but the vertical diameter of the air-containing, normal part of the lung above was not reduced. Evidently the slack given to the hemilung by the rise of the diaphragm was entirely taken up by obliteration of the cavity and shrinkage of the diseased tissues. The inference was that the shrinkage occurred over a period of three years from proliferation and contraction of fibrous tissue taking place as the lesion healed.

In the two cases to be described, selective collapse appeared very shortly after phrenicotomy, as in the case with pneumothorax, without sufficient time to allow for proliferation and contraction of fibrous tissue.

Case 1.—A man, aged 24, had had symptoms of pulmonary tuberculosis for two years. Roentgenographic examination showed that the lesion was scattered thinly over the upper and middle lung fields on the right, whereas the lower field presented no change except accentuated bronchial markings which did not appear tuberculous (fig. 3 *A*). A large cavity existed in the lower part of the middle field, close to the lower boundary of the lesion. The pulmonary environs were not distracted. The sputum contained tubercle bacilli. The right phrenic nerve was avulsed, and five days afterward the film reproduced in figure 3 *B* was taken. This showed the diaphragm and cavity to be greatly elevated, the former only a little the more, so that the vertical diameter of the hemilung was shortened much more than proportionately at the expense of the diseased segment. The size of the cavity was not changed. Figure 3 *C* gives the appearances eighteen months later when the diaphragm was in about the same position but the cavity was missing and the lesion as a whole was inactive.

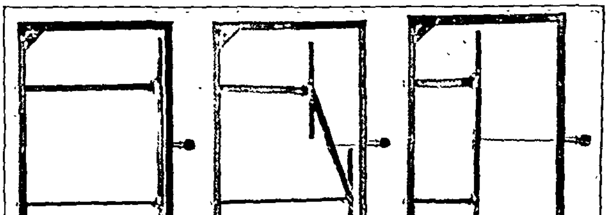

Fig. 2.—Model which demonstrates the principle of differential pulmonary elasticity responsible for selective collapse after pneumothorax.

Case 2.—A woman, aged 32, gave much the same history as the previous patient. Also, a large cavity was present in the lower part of the right middle lung field; but the parenchyma below it was infiltrated lightly with tuberculosis, while the lung above was nearly devoid of disease (fig. 4 *A*). Phrenicotomy was done on the right, and one week later the next roentgenogram (fig. 4 *B*) showed the diaphragm markedly elevated, with extremely little elevation and no appreciable collapse of the cavity. A film (fig. 4 *C*) eight months later indicated further rise of the diaphragm, closure of the cavity and fibrosis of the lesion.

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[1] O'Brien, E. J.: Phrenic Nerve Operations in Pulmonary Tuberculosis, J. A. M. A. **95**: 650 (Aug. 30) 1930.

[2] Matson, R. C.: Operative Collapse Therapy in the Treatment of Pulmonary Tuberculosis, West. J. Surg. **38**: 662 (Nov.), 743 (Dec.) 1930, **39**: 13 (Jan.) 1931.

Reference is made particularly to the selective collapse of the diseased parenchyma that occurred in both cases immediately after the operation. The objection could be raised in case 2 that the upper lobes may have been adherent to the chest wall and therefore could not retract when the diaphragm rose and that this, rather than differential elasticity, might explain the situation. Adhesions could, indeed, have been responsible in that case, for there is no proof of their presence or absence; but they could not have brought about the result in the first case. The author has seen other examples of this selective collapse, less extensive but equally well defined.

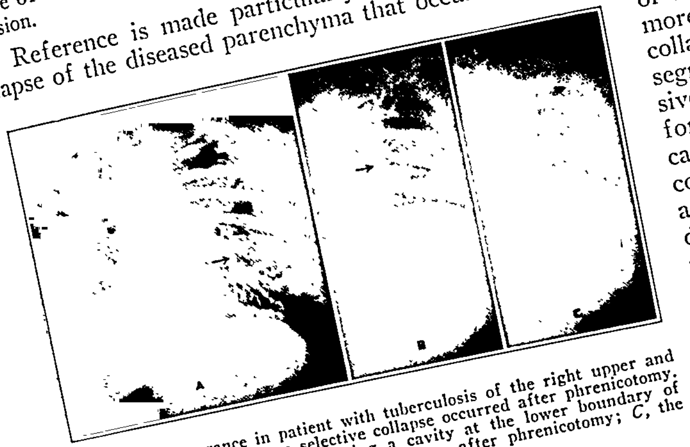

Fig. 3.—Appearance in patient with tuberculosis of the right upper and middle lung fields, in whom selective collapse occurred after phrenicotomy. *A*, entire chest, the arrow indicating a cavity at the lower boundary of the lesion; *B*, the right hemithorax five days after phrenicotomy; *C*, the same view eighteen months later.

A model has been constructed to illustrate the principle of differential elasticity which may have been concerned in the early selective collapse in these cases (fig. 5). It has a rectangular frame to represent the walls of a hemithorax. The short side below is movable and represents the diaphragm, while a rubber band, stretched from top to bottom, takes the place of the lung. The band is composed of two segments which are equal in length when relaxed but are unequal in thickness and elastic tension, the upper one being the tenser to represent a diseased upper lobe. The view at the left shows the model with the diaphragmatic side drawn to the bottom; the two series of vertical lines in the middle indicate the lengths of the two segments of the band found by measurement before, at a number of stages during, and after elevation of the diaphragmatic side; and the view at the right shows the model with the band completely relaxed. The relaxing process exhibits two distinct phases: first, one indicated at *x* with shortening chiefly of the thicker segment and, second, one at *y* with shortening chiefly of the other segment. Phase *x* appears to correspond to the phase of relaxation of the lung produced by phrenicotomy in figure 3 *A* to *B*. Although no illustration is given to show it, when the positions of the rubber segments are reversed in the frame to correspond with the positions of the normal and diseased segments of the lung in case 2, the band contracts in two phases as before. The first phase is again characterized by shortening of the thicker segment and suggests the manner of relaxation of the diseased segment of lung (fig. 4 *A* to *B*).

In proliferative pulmonary tuberculosis the scar tissue in the parenchyma tends to contract as healing progresses and, like cicatricial contraction in other regions of the body, the process requires months or years. Operations that relax the lung undoubtedly increase the contraction. Bronchial obstruction is a second cause for contraction in this disease, for when the bronchus of one or more lobes becomes obstructed, as by viscid exudate, blood clot, enlarged peribronchial lymph nodes, or bronchial cicatrix, or when the bronchus of one or more lobules within a lobe becomes so obstructed and collateral respiration is also shut off,[3] the corresponding segments of lung become atelectatic and shrink extensively. But these causes for shrinkage do not account for the selective collapse that took place in any of these cases soon after the relaxing operations, because the collapse was far too quick for the shrinkage of scar and because bronchial obstruction had not been produced. The collapse had the characteristics of elastic recoil rather than those of shrinkage of an inelastic substance.

Work just completed by Van Allen and Wu[4] demonstrates that parts of the lung infected with pneumococcus develop large increases of elastic tension as early as six hours after entrance of the organisms to the bronchi, which is many hours before blockage of the bronchioles and alveoli (consolidation); and also as late as many days after reestablishment of patency of the air passages and sacs. At these preconsolidative and postconsolidative stages of the disease, the lung shows thickening of the alveolar and lobular septums and pleural membranes from the presence of dilated vessels and interstitial inflammatory fluids and cells; and this seemed to us to be the cause for the increased resistance to inflation. Since in tuberculosis the pulmonary septums and membranes are thickened in much the same way from the earliest stages of the disease, whatever the type of lesion, it seems likely that the increased elastic tension in that disease is due somewhat to that cause. A second factor is probably the formation and contraction of scar tissue beforehand in some parts of the diseased lobe with stretching of the elastic tissues in the rest of the lobe. The extent to which the first or second cause is responsible in a given case is probably

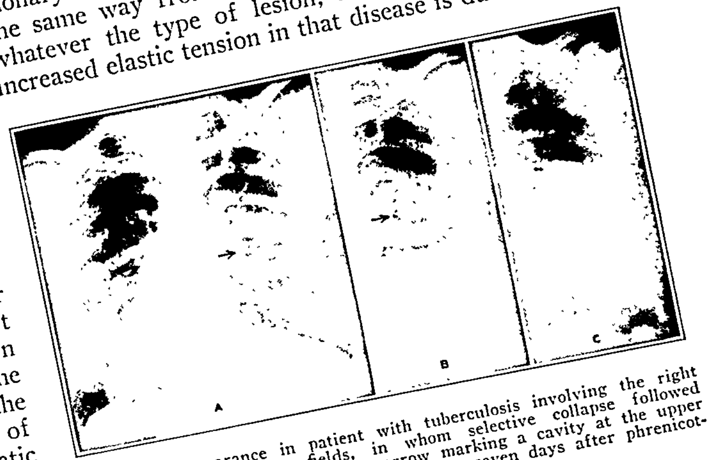

Fig. 4.—Appearance in patient with tuberculosis involving the right middle and lower lung fields, in whom selective collapse followed phrenicotomy: *A*, whole chest, the arrow marking a cavity at the upper boundary of the lesion; *B*, right hemithorax seven days after phrenicotomy; *C*, condition eight months later.

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[3] Van Allen, C. M., and Jung, T. S.: Postoperative Atelectasis and Collateral Respiration, J. Thoracic Surg. **1**: 3 (Oct.) 1931.

[4] Van Allen, C. M., and Wu, C.: Increased Elastic Tension of the Lung in Experimental Pneumonia, to be published.

determined by the degree to which the exudative or proliferative variety of tuberculosis happens to predominate. With essentially exudative lesions the first cause probably acts almost alone; while with the proliferative lesions, especially the early ones, both causes are probably concerned, the second being perhaps the more important.

The type of selective collapse in pulmonary tuberculosis that develops rapidly after pneumothorax or phrenicotomy probably occurs also, although to less extent, without collapsing operations, judging from the appearances presented by certain cases in my experience. In one, for instance, there was a small, extremely early lesion of the left upper lobe indicated in the roentgenogram by a patch of "soft" beaded trunks about 2 cm. above the center of the interlobar fissure. The fissure was visible as a transverse line with a marked upward curve at the center. After the patient had had two months' rest, roentgenographic examination showed almost normal parenchyma and a straight interlobar line. It was evident that the tissues had collapsed partially when actively infected and had reexpanded during healing. Bronchial obstruction was certainly not responsible for the collapse, since the infected portion was air containing, and the collapse disappeared much too quickly for it to have been due to scarring. The most likely cause was increased elastic tension and resistance to inflation on account of interstitial septal fluids and cells. This selective collapse is evidently an agent of rest for the inflamed parenchyma, as well as of compression.

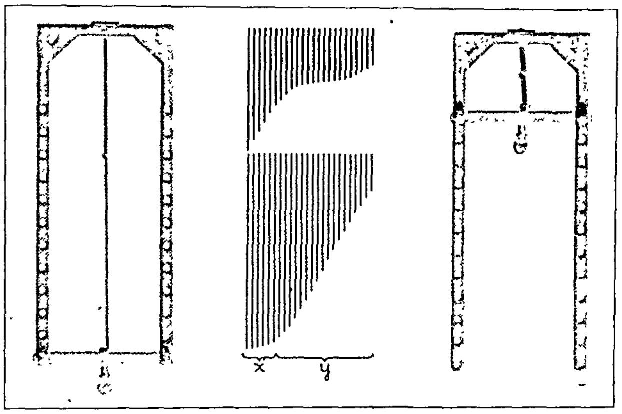

Fig. 5.—Model which demonstrates the principle of differential pulmonary elasticity probably responsible for selective collapse after phrenicotomy.

Selective collapse is not seen in every case of tuberculosis treated by pneumothorax, because it is prevented by adhesions, or because the lung is relaxed too much, or because the inflammation is too widespread. So, too, and probably for the same reasons, the phenomenon is not seen regularly after therapeutic paralysis of the diaphragm. It is detectable even less frequently after phrenicotomy than after pneumothorax, likely because pulmonary landmarks are seldom available in the first case to delineate the boundaries of the normal and diseased tissues, whereas they are always furnished in the second by the pleural surfaces. Selective collapse after phrenicotomy as extensive and evident as that seen in the two patients described here is unusual in my experience, while usually healing of the lesion regardless of its location in relation to the diaphragm affords the only evidence of the selective effect.

SUMMARY

The occurrence of selective collapse of the lung in pulmonary tuberculosis after phrenicotomy has been referred to and illustrated with cases. It has been compared in principle to selective collapse after pneumothorax. For both operations, differentiation is made between the deflation of the diseased tissues which occurs immediately and is probably due to increased elastic tone of the lung, and that which occurs gradually and is due to formation and contraction of scar tissue. The increased elastic tension of the lung, in the first type, is believed to be due largely to thickening of the pulmonary septums and membranes from vascular congestion and interstitial deposit of inflammatory fluids and cells.

LIPODYSTROPHY

ATROPHY AND TUMEFACTION OF SUBCUTANEOUS TISSUE DUE TO INSULIN INJECTIONS

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AND
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Atrophy of the subcutaneous tissues producing depressed areas on the skin as a result of insulin injections was first reported in 1926 by Barborka.[1] He noted two instances of such atrophy and recommended massage of the tissue after insulin therapy and a variation of the site of injection. He found no evidence of inflammation and no muscular weakness or evidence of nerve injury. In the same year, Depisch[2] recorded five cases of atrophy due to insulin and stated that the onset might vary from a few months up to two years after the start of the treatment. He noted some impairment in sensations over the affected area. In 1927, Mentzer and DuBray[3] reported an instance of this condition. Sections of the area did not indicate any inflammatory changes. Davidson,[4] in the same year, observed atrophy in a woman four months after the beginning of insulin therapy.

In 1928, the following articles were published: Rabinovitch[5] observed atrophy in eight patients. He found no lipase in insulin. Chapman[6] reported the disappearance of atrophy two and one-half years after the site of the insulin injection had been changed. Lawrence[7] found lymphocytic infiltration with some plasma cells and eosinophils in injected nonatrophic areas. He felt that the method of preservation of the insulin or the sterilization of the needle were not at fault but that damage to the delicate protoplasmic envelop of the fat cells released fat globules, which in turn stimulated histiocytes, which assumed lipophagic activity. Such lipophagic cells were reported by Gilchrist and Ketron[8] in 1916 from another type of injection. Carmichael and Graham [9] recorded three instances of atrophy and suggested that it might be due to lipase in the insulin. Joslin [10] recorded three cases of subcutaneous atrophy. One of the patients complained of pain in the depressed area.

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[1] Barborka, C. J.: Fatty Atrophy from Injections of Insulin, J. A. M. A. **87**: 1646 (Nov. 13) 1926.

[2] Depisch, F.: Local Lipodystrophy Following Repeated Injections of Insulin: Five Cases, Klin. Wchnschr. **5**: 1965 (Oct. 15) 1926.

[3] Mentzer, S. H., and DuBray, E. S.: Fatty Atrophy from Injections of Insulin, California & West. Med. **26**: 212 (Feb.) 1927.

[4] Davidson, R. A.: Absorption of Subcutaneous Fat Deposits at Site of Repeated Insulin Injections: Case, California & West. Med. **26**: 210 (Feb.) 1927.

[5] Rabinovitch, I. M.: Atrophy of Subcutaneous Fat Following Injections, Canad. M. A. J. **18**: 560 (May) 1928.

[6] Chapman, P. D. H: Local Fat Atrophy Following Insulin Injections, Lancet **1**: 674 (March 31) 1928.

[7] Lawrence, R. D.: Effect of Prolonged Use on Subcutaneous Tissues, Lancet **1**: 1328 (June 30) 1928.

[8] Gilchrist, T. C., and Ketron, L. W.: A Unique Case of Atrophy of Fatty Layers of the Skin, Preceded by the Ingestion of the Fat by Large Phagocytic Cells, Bull. Johns Hopkins Hosp. **27**: 291 (Oct.) 1916.

In 1929, Fischer [11] studied twenty-four children who had received insulin for more than six months. Atrophy was present in eight patients and slight evidences of this trouble were found in eight others. In the same year, McCormick and Moorhead [12] observed two instances of atrophy. In one woman it had appeared after six injections.

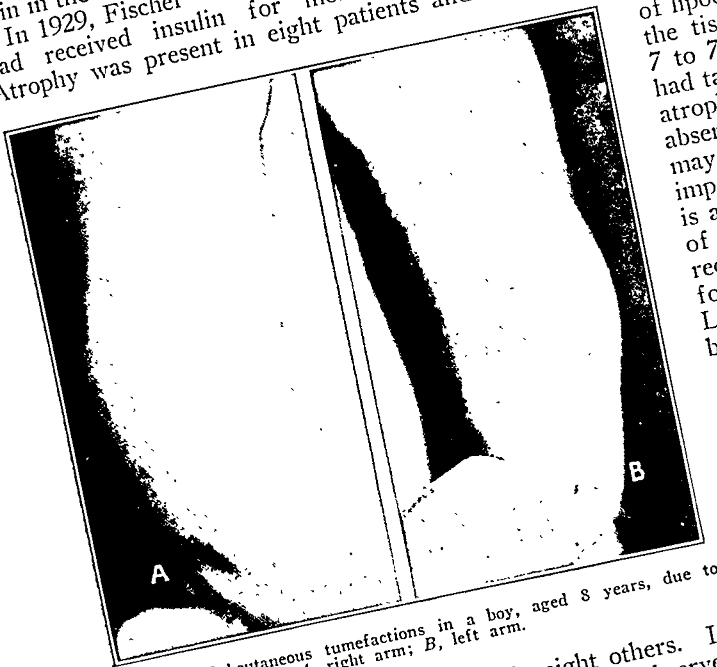

Fig. 1.—Subcutaneous tumefactions in a boy, aged 8 years, due to injections of insulin: *A*, right arm; *B*, left arm.

In 1930, Reed, Anderson and Mendel [13] found no lipodystrophy in the tissues of rats after injections of insulin or salt solution. Depisch [14] again discussed the subject and stated that about 10 per cent of all patients, especially women, who continue insulin up to two years develop atrophy as a result of traumatic and chemical effect from the insulin itself. Woodhouse,[15] in 1930, reported postmortem studies of an atrophic area in a patient. No evidence of inflammation was found. Nichols [16] recorded large areas of atrophy beyond the immediate site of infection in line of lymphatic drainage. In two years, regeneration of the fat had occurred. He noted that females and children were especially susceptible. Priesel and Wagner [17] suggested that tricresol might be responsible for the atrophy. Boller [18] reported eight instances of atrophy and stated that Falta had seen six cases in one year in his practice. Stransky [19] reported one instance of lipodystrophy and suggested the addition of procaine hydrochloride to the insulin to reduce the distress of the injection. In 1930, Eeg-Olofsson [20] noted atrophy in a woman ten months after beginning insulin therapy. Microscopically, fatty atrophy and small areas of round cell infiltration similar to that occurring after any hypodermic injection were found.

During the last nine years, since his first use of insulin, one of us, (A. H. R.) observed two instances of lipodystrophy. Recently we have carefully examined the tissues of fifty patients whose ages varied from 7 to 79, with an average age of 40.6 years, and who had taken insulin for an average of one year. Definite atrophy was observed in two additional cases. The absence of atrophic reaction in more of our patients may be due to the emphasis we have always laid on the importance of the variation in the site of injection. It is also interesting to report that definite fatty atrophy of subcutaneous tissue occurred in one patient who had received pollen therapy in the same area once a week for ten months. This corroborates the opinion of Lawrence that mechanical injury of the fatty cells may be the true cause of the atrophy.

SUBCUTANEOUS TUMEFACTION

Recently an increase in the subcutaneous tissue in the outer aspect of each arm has been observed in one of our patients, a lad of 8 years, who was first seen by us at the age of 16 months in precoma. Insulin has been given ever since and in spite of our warning to give it in varying areas the injections had alternately been given in the same areas of the arms. During the last year the swellings had appeared and had gradually increased so that when seen five months ago they were soft and nonpainful and semifluctuating. No changes in sensation were present. Since injections in these areas have been stopped, the swellings have diminished to about half their size. The insulin was being absorbed satisfactorily from the swollen areas, since no decrease in insulin has been possible since the change. In fact, the mother thinks that the swollen areas absorbed the insulin faster than do the tissues in the legs. The boy is well and vigorous, weighs 64 pounds (29 Kg.) and measures 50½ inches (128 cm.) in height, which is 1 inch below the normal for his age.

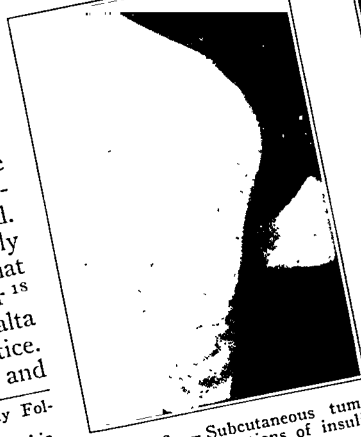

Fig. 2. — Subcutaneous tumefaction from injections of insulin in a woman, aged 50.

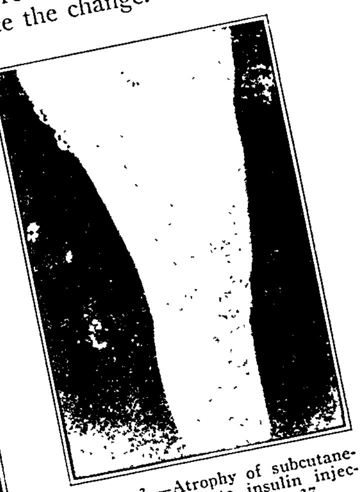

Fig. 3.—Atrophy of subcutaneous tissue due to insulin injections in a woman, aged 37.

In the examination of the fifty patients already referred to in this paper, three other patients with tumefactions due to repeated injections of insulin were found. A half lemon sized swelling in the outer surface of both arms occurred in a girl, aged 19 years, who had taken 70 units of insulin daily for seven years. These swellings had appeared during the last six months. Another girl, aged 12 years, had a moderate swelling on the arm, which disappeared in two months after the site of injection was changed. She has taken 32 units of insulin for five years and noticed the swelling one year ago. The other tumefaction occurred in a woman, aged 50, on the outer aspect of the right thigh. She had used this area for six months and had taken 16 units of insulin for one year. All these swellings were soft, nonpainful and noninflammatory.

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[9] Carmichael, E. A., and Graham, George: Local Fat Atrophy Following Injections, Lancet **1:** 601 (March 24) 1928.

[10] Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1928.

[11] Fischer, A. E.: Frequency of Atrophy of Subcutaneous Fat, Following Injections of Insulin, Am. J. Dis. Child. **38:** 715 (Oct.) 1929.

[12] McCormick, V. O., and Moorhead, T. G.: Insulin Fat Atrophy, Irish J. M. Sc., November, 1929, p. 727.

[13] Reed, Lucille L.; Anderson, W. E., and Mendel, L. B.: Lipodystrophy from Insulin Injections, J. A. M. A. **95:** 395 (Aug. 9) 1930.

[14] Depisch, F.: Local Lipodystrophy Around Points of Injection, Wien. med. Wchnschr. **80:** 168 (Jan. 25) 1930.

[15] Price, L. R. W.: Local Absorption of Fat Due to Injections of Insulin, Lancet **1:** 1015 (May 10) 1930.

[16] Nichols, J. B.: Atrophy of Subcutaneous Fat Associated with Injections, Am. J. M. Sc. **180:** 90 (July) 1930.

[17] Priesel, Richard, and Wagner, Richard: Lipodystrophy in Children Receiving Insulin Injections Probably Due to Tricresol Content of Insulin, Klin. Wchnschr. **9:** 1548 (Aug. 16) 1930.

[18] Boller, Reinhold: Treatment of Lipodystrophy Due to Insulin Therapy, Klin. Wchnschr. **9:** 2433 (Dec. 27) 1930.

[19] Stransky, Erwin: Lipodystrophy in and Around the Sites of Insulin Injections, Wien. med. Wchnschr. **80:** 133 (Jan. 18) 1930.

[20] Eeg-Olofsson, R.: Local Changes in the Subcutaneous Tissue Following Injections of Insulin, Act med. Scandinav. **73:** 89-98, 1930.

We have found one other record of such tumefaction resulting from insulin therapy. Eeg-Olofsson noted it in a 16 year old girl who had taken 12 units twice daily in the outer surfaces of the thighs for one and one-half years. After this, increasing swellings occurred. "Two symmetrical tumors, about the size of fists," were present. They were nonpainful, soft and pseudofluctuating. The skin was firmly attached but the swellings were movable over the underlying muscles. Section of the tumor showed a chronic inflammatory reaction consisting of round cell infiltration, increased connective tissue and hemosiderosis. No definite increase in fatty tissue was noted. Strong fibrous strands extended from the skin into the subcutaneous fat. In one year after cessation of injections in the swollen areas, the tumefactions had practically disappeared.

242 Moss Avenue.

THE TREATMENT OF OBSTINATE CHOREA WITH NIRVANOL

WITH NOTES ON ITS MODE OF ACTION

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AND
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During the last fifteen years the capacity of nirvanol to produce a syndrome known as "nirvanol sickness" has been widely utilized in German clinics in the treatment of violent choreas.[1] Nirvanol is phenyl-ethyl-hydantoin, an hypnotic resembling phenobarbital in its pharmacologic action, but with a five instead of a six membered ring nucleus. "Nirvanol sickness" consists of fever, rash and eosinophilia, coming on sharply in a high percentage of persons treated, usually from six to twelve days after the first administration of the drug. It has been generally observed that following the appearance of this syndrome the course of the disease is shortened.

Recently similar reports have come from England.[2] Poynton and Schlesinger[3] have even observed the disappearance of persistent rheumatic nodules, accompanied by a lowering of temperature and quieting of the pulse rate, in four patients with "subacute rheumatism" who were given the usual course of nirvanol treatment. Three patients in the same series were not improved.

Some authors[4] consider "nirvanol sickness" to be caused by a specific idiosyncratic reaction to the drug; others[5] believe it due to a cumulative toxic phenomenon. Instances of heavy overdosage without harmful effect are on record;[6] on the other hand, several deaths, possibly but not certainly due to the drug, have been reported.[7]

This investigation was begun with the hope of obtaining information as to the value of the use of nirvanol in obstinate chorea and concerning the mechanism of its action. Two children and one young adult with persistent chorea were selected for the treatment. They had not been benefited by other usual forms of therapy, as described hereafter. Each of these patients was given approximately 0.0063 Gm. of nirvanol per pound a day in hot tea. This was estimated to be an average dose from Lesigang's series of 106 cases, the largest found in the literature. Owing to serious complications following the administration of nirvanol in one patient, the investigation was not followed further than an examination of the first series of three cases. Abbreviated case histories follow.

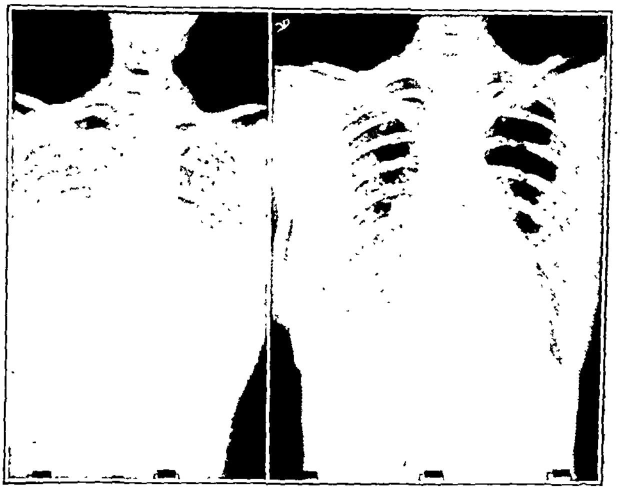

Fig. 1.—Portable x-ray chest plates, showing changes occurring during "nirvanol sickness" and after process had cleared.

REPORT OF CASES

Case 1.—M. F., a girl, aged 12 years, was well until May, 1928, when she had definite chorea for the first time, lasting two months. In January, 1930, she became nervous, soon followed by a recurrence of chorea. There was marked athetosis, speech difficulties and temperamental changes. She was hospitalized from February 24 to March 7, with definite improvement in the chorea. On one occasion slight, transitory polyarthritis appeared. She was admitted to the House of the Good Samaritan, March 7, with definite but mild chorea. There

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[1] Husler, J.: Nirvanol bei Chorea minor, Ztschr. f. Kinderh. **38:** 408-411, 1924. Hefter, Elizabet: Nirvanolbehandlung bei Chorea minor, Ztschr. f. Kinderh. **38:** 403-407, 1924. Gottlieb, Adalbert: Ueber Nirvanolbehandlung der kindlichen Chorea minor, Monatschr. f. Kinderh. **43:** 433-438, 1929.

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[6] Majerus, K.: Erfahrungen über Nirvanol, Deutsche Ztschr. f. Nervenh. **63:** 312-325 (Feb. 21) 1919.

[7] Jacob, Charlotte: Ueber Nirvanolvergiftung, Deutsche med. Wchnschr. **45:** 1331-1333 (Nov. 27) 1919.

was no demonstrable evidence of heart disease, and she was well developed and nourished, weighing 61 pounds (27.7 Kg.).

From March 8 through April 27, 15 minims (0.9 cc.) of tincture of stramonium three times a day was given without any change in the chorea. The patient weighed 63¾ pounds (28.9 Kg.) on the latter date.

On April 28, 29 and 30 she received 0.4 Gm. of nirvanol daily. She was awake during the day but slept heavily at night. The drug had no effect on the chorea.

May 1, 2, 3 and 4, she received 0.2 Gm. of nirvanol daily. The chorea, if anything, was more active.

May 5, she developed a scarlatinal rash over the forearms, body and legs. Nirvanol was not given. There was no fever. The chorea was slightly more active.

May 6, the patient received 0.2 Gm. of nirvanol. The rash was fading. There was no fever. The chorea became slightly less active.

The rash faded within several days. May 10, there was no temperature reaction; the weight was 63½ pounds (28.8 Kg.). Figure 2 shows blood changes occurring as a result of nirvanol treatment.

June 5, 1931, the patient was still hospitalized for mildly active chorea, which was not demonstrably affected by the nirvanol therapy. There has been a gradual increase in weight to 90½ pounds (41 Kg.). There is no clinically demonstrable heart disease. Two subsequent courses of stramonium have not affected the chorea.

CASE 2.—S. L., a girl, aged 9 years, was well until March, 1929, when two weeks after complaining of unsteadiness in walking she developed violent chorea and could neither stand nor speak. She was hospitalized from April 15 to June 1, and from June 1 until July 24 she was in a foster home. On admission to the House of the Good Samaritan, July 24, there were mild to moderate choreiform movements with a definite speech defect. There had been a gradual improvement in the chorea from the time of first hospitalization, with a loss of 15 pounds (6.8 Kg.) in the last four months. No demonstrable heart disease was found. During the first two months at the House of the Good Samaritan there were frequent rises in temperature to between 100 and 101 F. (rectal). The white blood count was consistently above 10,000.

From September 6 to October 1, 8 minims (0.5 cc.) of tincture of stramonium was given four times a day. It had no effect on the chorea.

From November 24 to December 17, the dosage was repeated. It had no effect on the choreiform movements but the speech defect improved slightly. There was no longer any fever and the white blood count remained consistently below 10,000.

From June 14, 1929, to April 27, 1930, 15 minims (0.9 cc.) of stramonium was given three times a day. It had no effect on the chorea, which continued definite, though mild. The weight was 68 pounds (31 Kg.).

April 28, 29 and 30, the patient received 0.38 Gm. of nirvanol daily. She slept heavily but was not drowsy during the day. There was no change in the chorea.

From May 1 to 6, she received 0.2 Gm. of nirvanol daily. The chorea was possibly a little more active. The temperature was 101 F. (rectal) the afternoon of May 6.

May 7, a definite maculopapular rash appeared on the arms, face, legs and buttocks in the form of pink areolas with light colored centers, the sizes varying from 1 or 2 mm. to 10 mm. in diameter. The rash was more noticeable in the pressure areas. There was no fever: no change took place in the chorea.

May 8, more areas of rash appeared but the majority were fading. There was no fever.

May 16, there was no further fever. The rash disappeared completely in about four days. The chorea remained unchanged. Figure 2 shows blood changes occurring as a result of nirvanol treatment.

May 15, 1931, the patient was discharged from the House of the Good Samaritan to the Contagious Hospital because of measles. During the past year there has been no change in the mildly active chorea. The weight has increased to 74 pounds (33.6 Kg.). There is no evidence of heart disease.

CASE 3.—F. L., a girl, aged 17 years, was well until January, 1927, when she had rheumatic fever. Three months later, heart disease was diagnosed for the first time by the school physician. In May, 1929, there was a recurrence of rheumatic fever with migrating polyarthritis. The patient was hospitalized for six weeks. July 1, polyarthritis returned and there was also stabbing precordial pain. She was in bed for three weeks prior to admission to the House of the Good Samaritan, July 23. She lost 16 pounds (7.3 Kg.) in three or four months. On admission the patient was rather pale, tall and poorly nourished. There were occasional mild choreiform movements of the hands. Her weight was 94¾ pounds (42.9 Kg.). The temperature occasionally rose to 100.5 F. (mouth) during the first month. Definite swelling and tenderness developed in the right metacarpophalangeal joint just after admission. There was slight cardiac enlargement and apical systolic and diastolic murmurs of mitral disease. The chorea became considerably worse several days after admission; the medication and course of the chorea may be summarized as follows:

From July 27 to August 2, ½ grain (0.03 Gm.) of phenobarbital was given three times a day.

From August 3 to August 10, 1 grain (0.06 Gm.) of phenobarbital was given three times a day. It had no effect on the chorea.

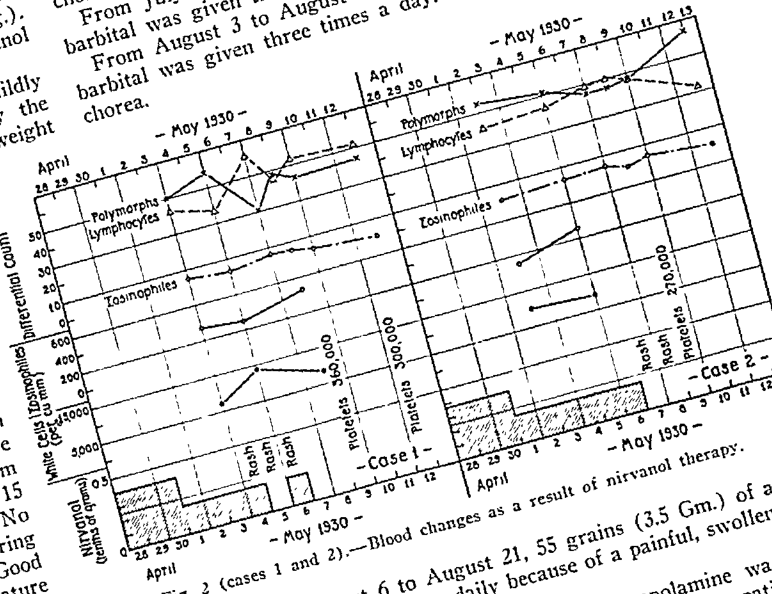

Fig. 2 (cases 1 and 2).—Blood changes as a result of nirvanol therapy.

From August 6 to August 21, 55 grains (3.5 Gm.) of acetylsalicylic acid was given daily because of a painful, swollen wrist and elbow.

August 8, 1/100 grain (0.6 mg.) of scopolamine was given subcutaneously. The chorea became violent. The patient was isolated.

From August 9 to August 21, 1 drachm (4 cc.) of paraldehyde was given four times a day. The chorea continued to be violent. There was no effect from the paraldehyde. Warm baths (not continuously) were ineffective.

From August 22 to September 1, 8 minims (0.5 cc.) of tincture of stramonium was given four times a day.

From September 1 to September 21, 10 minims (0.6 cc.) of tincture of stramonium was given four times a day.

Two or three days after the stramonium medication was begun the choreiform movements became less violent.

From November 1 to November 25, 8 minims of tincture of stramonium was again given four times a day.

There was a gradual subsidence of chorea to moderate activity, and the patient returned to the ward, Jan. 12, 1930.

From January 12 to March 7, 15 minims of tincture of stramonium was given three times a day. There was a gradual subsidence of chorea to mild activity. There still were definite purposeless movements. A small spontaneous nosebleed occurred, March 7. The patient was allowed out of bed, up to two hours daily, from March 24 to April 11, but the chorea became moderately active and she had to be returned to bed.

From March 6 to April 27, 15 minims of tincture of stramonium was given three times a day. The chorea became moderately active. The patient's weight, April 27, was 93 pounds (42.2 Kg.).

April 28, 29 and 30, she received 0.55 Gm. of nirvanol daily. She became very drowsy but it had no real effect on the choreiform movements.

May 1 and 2, she received 0.3 Gm. of nirvanol daily. There was a severe nosebleed, May 2. The chorea became slightly more active, but the patient was stuporous most of the time. The temperature rose to 102 F. (rectal).

May 3, a very fine macular pink rash appeared on the dorsum of the feet and ankles. She continued to be drowsy. The temperature rose to 103 F. (rectal). No platelets were found in the blood smear. The chorea became somewhat more active.

May 4, an extensive scarlatiniform rash appeared over the entire body. The temperature rose to 100 F. (rectal). The chorea remained unchanged.

May 5, the rash was present but fading. The patient was still drowsy. The chorea became less active. The temperature rose to 100.2 F. (rectal). No platelets were found in the blood smear.

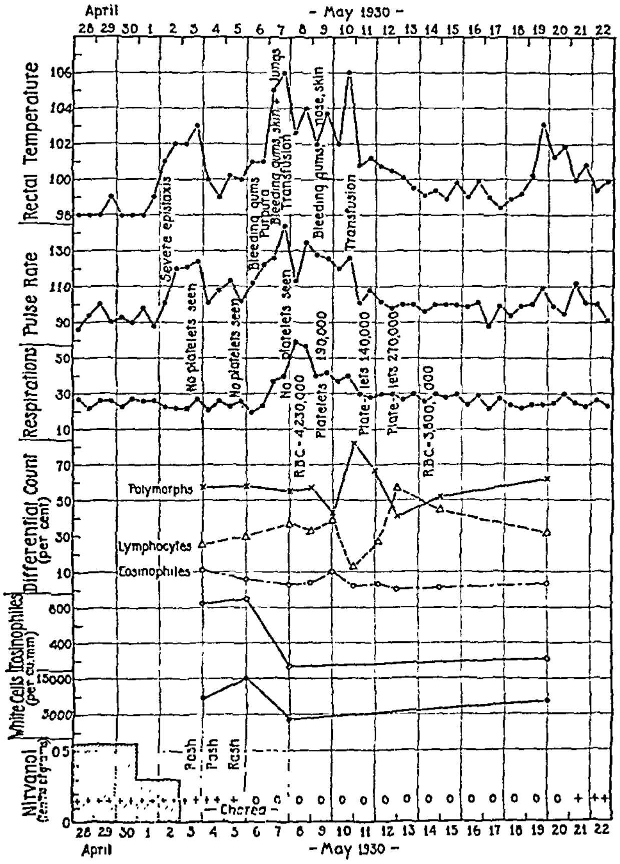

Fig. 3 (case 3).—Severe reaction to nirvanol therapy.

May 6, a mild but persistent bleeding began from the gums. Following venipuncture numerous and extensive hemorrhagic areas appeared below the tourniquet. She was bleeding into the skin and subcutaneous tissues. The patient looked ill. There was no chorea. She was stuporous. The temperature rose to 101 F. (rectal).

May 7, at 6 a. m. the patient suddenly became weak and cyanotic. She had a dry, irritating cough, and respirations were up to 40. The temperature was 105 F. (rectal), pulse 144. The bleeding from the gums continued. Numerous extensive, coarse, moist râles were heard throughout both lungs. There was an increase in the purpuric areas. Petechiae appeared over the arms, trunk and legs. No platelets were seen in the blood smear. Bleeding time was sixty minutes. Direct transfusion of 400 cc. of blood was done. The temperature rose to 106 F. (rectal) after transfusion. Rapid respirations and mild cyanosis continued. There was an irritating, nonproductive cough. There was no chorea. The patient was drowsy but alert when awakened. Her condition was critical.

May 8, she was more awake and alert. There was no fresh bleeding; the cough continued; cyanosis was less. There were numerous râles throughout the lungs as before. The temperature rose to 104 F. (rectal). No platelets were seen in the blood smear. Reticulocytes were 28 per cent; red blood cells, 4,230,000. The benzidine test on the stool was frankly positive. Portable x-ray films showed a few small, mottled areas in the first interspace on the left, and entire right chest dull, with several rounded areas of increased density within the lung fields. These were thought to be hemorrhagic areas occurring probably at the time of the collapse of the day before.

May 9, the patient was better most of the day with respirations down to 30 and the lungs much clearer. She was brighter. There was occasional bleeding from the gums. There was mild nosebleed and several small, fresh showers of petechiae. Platelets numbered 190,000. Bleeding time was six minutes; coagulation time, six minutes. About 10 p. m. she began to bleed persistently again from the gums and nose.

May 10, bleeding was profuse until 4 a. m., and chiefly from the nose, pharynx, palate and gums. One-eighth grain (8 mg.) of morphine, subcutaneously, resulted in some rest. Respirations were 30. The temperature rose to 106 F. (rectal). Direct transfusion of 450 cc. of blood at 11:30 a. m. had no reaction. Roentgen examination showed a slight amount of fluid in both chests and changes suggesting general edema of the lung.

May 11, there was no further bleeding. The patient was more comfortable, and awake most of time. The temperature rose to 101 F. (rectal). The fluid intake and output remained good throughout. The benzidine test was still positive on the stool. *There was no further chorea.*

May 12, there was no further bleeding. Platelets were 270,000. Bleeding time was three minutes. May 14, she was considerably better. Red blood cells numbered 3,900,000; platelets, 270,000; bleeding time was four minutes.

May 20, after a week of normal temperature without further bleeding, the temperature the night before rose to 104 F. (rectal), and this night 102 (rectal). Respirations were under 30. The cervical glands were considerably enlarged.

May 22, roentgen examination showed the lungs practically clear, the peculiar process having disappeared (fig. 1). Mild chorea had returned.

June 1, the chorea had returned to a moderately active degree, as active as prior to the nirvanol therapy. The weight now was 85 pounds (38.6 Kg.), an 8 pound (3.6 Kg.) loss. There were rare, slight nosebleeds. (In figure 3 one may find the diagrammatic representation of the important events occurring as the result of the nirvanol therapy. Blood changes and temperature charts are especially interesting.)

June 5, 1931: The patient has been hospitalized continuously for mild to moderately active chorea, which has varied but little since the nirvanol therapy. The weight is 95 pounds (43 Kg.). On two occasions she has been allowed up but returned to bed because of increased chorea. There have been nosebleeds and on one occasion erythema multiforme. On examination there is moderate cardiac enlargement and evidence of mitral and aortic disease. The general condition is good.

CLINICAL COMMENT

Histories of three obstinate cases of chorea are given, with emphasis on their response to nirvanol therapy. In each of the three cases, "nirvanol sickness" was produced. The dosage was halved after three days and discontinued on the first appearance of rash. A definite rash occurred in each case as described in the case reports; on the sixth day in case 3, and on the eighth and ninth days respectively in cases 1 and 2. Case 1 at no time showed a temperature reaction, and in case 2 there was a single rise to 101 F. (rectal), sixteen hours prior to the appearance of the rash. Definite eosinophilia occurred in all cases, with an inversion of the neutrophilic and lymphocytic ratios, which is shown in figure 2. There was a definite increase in the total eosinophils, as shown in the same chart. The charts are strikingly similar to those presented by Poynton and Schlesinger. Case 3 failed to show the usual variation in neutrophilic and lymphocytic elements until quite late, probably because of the complication of hemorrhage.

The most interesting phase of this report is concerned with the unusual reaction of case 3 to nirvanol therapy. A definite rash appeared on the sixth day, preceded by a temperature rise to 102 F. (rectal). On the ninth day after therapy was begun, bleeding occurred, first from the gums, then into the skin and subcutaneously. Blood platelets disappeared from the smear. There was a conspicuous prolongation of bleeding time with coagulation time unchanged. A sudden pulmonary episode occurred on the ninth day, possibly best explained as bleeding into the lung tissue (fig. 1). Each of two transfusions was followed by definite improvement. The blood picture resembled bone marrow suppression, as produced with nirvanol in rabbit studies by Leichtentritt and Lengsfeld,[5] and that seen in human beings, in benzene and arsphenamine poisoning. In addition, there was a secondary reaction, three weeks after therapy was begun, consisting in a rise in fever of two days' duration. The first reaction with its unusual pulmonary complication was nearly a fatal issue and shows clearly that the drug is one not to be used indiscriminately. Pilz [8] reported a somewhat similar case in 1927. The resemblance of these symptoms to the lung picture in barbital (veronal) poisoning (Willcox [9]) suggests a common toxic mechanism.

In each case the nirvanol caused sound sleeping, and in case 3 drowsiness. If anything, the chorea was slightly increased near the onset of "nirvanol sickness." In case 3 it completely disappeared for about two weeks following the reaction. All three patients have maintained their chorea unaltered, and one year following the use of the drug they continue to show mild choreiform movements.

COMMENT ON METHOD OF ACTION OF NIRVANOL

The very high incidence of skin rashes following the administration of nirvanol suggests the operation of a specific idiosyncrasy. Nirvanol produces an irritant reaction in the normal human skin, which makes any estimation of specific skin hypersensitiveness extremely difficult and necessitates careful controls. Two related drugs, phenobarbital and acetyl-nirvanol, which resemble nirvanol in their action in the normal human skin, were used for comparison. In the course of a number of intradermal tests on each patient, done with varying dilutions of the materials, before, during and subsequent to the appearance of their skin rashes, no evidence was obtained of a specific idiosyncratic reaction to nirvanol, either immediate or delayed.

In a recent paper Biberstein [10] asserted that he transferred atopic reagins to mercury and other chemicals from idiosyncratic (skin-reactive) patients by means of the Prausnitz-Küstner technic. Transfers by this technic from our three patients during and subsequent to the appearance of their skin rashes were negative. Since nirvanol does not cause a nonspecific contraction of the guinea-pig uterus, 6 cc. of blood serum taken from patient 3, May 14, was injected into a female guinea-pig for the purpose of testing for passive sensitization by the Dale uterus technic. On the next day the uterus did not react to nirvanol in the Dale apparatus.

Three guinea-pigs and three rabbits were given a course of nirvanol in doses corresponding by weight to those used in human therapy. None of these animals became skin-sensitive to nirvanol either during or after the injections, nor did any animal exhibit an abnormal rise or fall in temperature. After an incubation period of nineteen days following the last injection, the guinea-pigs were injected intraperitoneally with 30 mg. of the drug. No anaphylactic symptoms were observed. Since Leichtentritt and Lengsfeld [5] observed a deleterious effect on the bone marrow of rabbits injected with large doses of nirvanol, such evidence as is available from animal experiments favors a toxic explanation of the drug's action. In view of the difficulty with which the barbital series is excreted, and the resemblance of symptoms of severe "nirvanol sickness" to those seen in barbital poisoning,[9] it would seem to be advisable for practical purposes to consider that the doses being used at present in the treatment of chorea produce toxic symptoms which may lead to dangerous complications.

SUMMARY

1. Treatment with a course of nirvanol produced no permanent benefit in three obstinate cases of chorea.
2. One of the patients suffered a dangerous reaction to the drug. The details are reported.
3. Tests for the presence of a specific hypersensitiveness to nirvanol were consistently negative.

25 Binney Street—12 Chestnut Street.

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[8] Pilz, Clara: Auffallende Lungenerscheinungen bei Nirvanolintoxikation, Arch. f. Kinderh. **82**: 210-212, 1927.

[9] Willcox, W. H.: Veronal Poisoning, Lancet **2**: 1178-1181 (Oct. 25) 1913.

[10] Biberstein, Hans: Beiträge zur passiven Uebertragung der Ueberempfindlichkeit gegen chemisch bekannte Stoffe, Ztschr. f. Immunitatsforsch. u. exper. Therap. **48**: 297-368 (May 10) 1926.

Clinical Notes, Suggestions and New Instruments

TOXIC CIRRHOSIS OF THE LIVER DUE TO CINCHOPHEN COMPOUNDS: REPORT OF THREE FATAL CASES

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Since the introduction of cinchophen (phenyl-quinoline-carboxylic acid) in 1908 by Nicolaier and Dohrn,[1] its use has become widespread as an analgesic, particularly in arthritis. The fact that it may be purchased without a physician's prescription and is usually the chief constituent of many so-called rheumatism cures has added to its increasing use.

That the drug or its preparations may cause toxic symptoms was observed by von Muller,[2] Herrick [3] and Phillips.[4] In 1922, Schroeder [5] first drew attention to the toxic properties of the drug variously known as phenylcinchoninic acid, cinchophen, quinophan, atophan, agotan and phenoquin. He reported seventeen cases, chiefly of mild poisoning, consisting of headache, gastro-intestinal disturbances, and transient jaundice. Following Langdon-Brown's [6] communication in 1926, a dozen fatalities were reported by Evans,[7] Glover,[8] Willcox [9] and Wells.[10]

In 1925, Cabot [11] reported the first death, from acute yellow atrophy of the liver, of a patient who had taken "Weldona" tablets. Rabinowitz,[12] in 1930, collected forty-one cases in the literature and added nine additional cases. There were twenty-five deaths in this series of cases with twenty autopsies which

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From the Medical Service, St. Elizabeth Hospital.

[1] Nicolaier, Arthur, and Dohrn, Max: Deutsches Arch. f. klin. Med. **93**: 331, 1908.

[2] von Muller, A.: Abstr. München. med. Wchnschr. **60**: 445, 1913.

[3] Herrick, W. W.: A Scarlatiniform Rash from Atophan, J. A. M. A. **61**: 1376 (Oct. 11) 1913.

[4] Phillips, John: Skin Rashes Following the Administration of Atophan, J. A. M. A. **61**: 1040 (Sept. 27) 1913.

[5] Schroeder, K.: Ugesk. f. Læger **84**: 1141 (Sept. 7) 1922.

[6] Langdon-Brown, W.: Brit. M. J. **2**: 37 (July 3) 1926.

[7] Evans, Geoffrey: Brit. M. J. **2**: 93 (July 10) 1926.

[8] Glover, L. S.: Brit. M. J. **2**: 136 (July 17) 1926.

[9] Willcox, W. H.: Brit. M. J. **2**: 273 (Aug. 17) 1926.

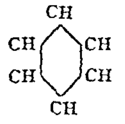
[10] Wells, C. L.: Brit. M. J. **2**: 759 (Oct. 23) 1926.

[11] Cabot, R. C.: Boston M. & S. J. **192**: 1122 (June 4) 1925.

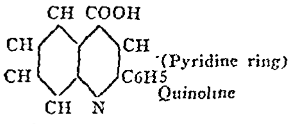
[12] Rabinowitz, M. A.: Atrophy of the Liver Due to Cinchophen Preparations, J. A. M. A. **95**: 1228 (Oct. 25) 1930.

confirmed the diagnosis of acute yellow atrophy. Parsons and Harding,[13] in 1931, reported four fatal cases and classified the symptoms roughly into four groups: (1) cutaneous manifestations, such as pruritus, angioneurotic edema, urticaria, and macular and papular eruptions, exemplified by Phillips[4] in 1913; (2) anaphylactoid reactions characterized by neurocirculatory disturbances associated with rapid pulse and lowered blood pressure following the ingestion of a single dose of cinchophen, as mentioned by Scully[14] in 1924; (3) gastro-intestinal disturbances including simple aphthous ulcers in the mouth, pyrosis, nausea, vomiting, and diarrhea, reported by Schroeder[5] in 1922, and (4) liver involvement as indicated by the appearance of jaundice, first noted by Worster-Drought[15] in 1923. Recently Beaver and Robertson[16] reviewed five fatal cases at the Mayo Clinic and suggested a specific pathology for cinchophen poisoning of the liver, which "is essentially dissimilar to the ordinary Laënnac or portal variety."

Chemically, cinchophen is 2-phenyl-quinoline-4-carboxylic acid.



Benzene



Cinchophen

Rotter[17] states that it is excreted in the urine as 2-ortho-hydroxyl-phenyl-quinoline-4-carboxylic acid, an oxidation product. According to Willcox[9] the toxic action of the drug is due to the quinoline nucleus, consisting of the benzene and the pyridine rings, which yield the toxic ring of free benzene. Willcox says: "It is well known that jaundice occurs after the administration of the arsenobenzene compounds of arsenic, and the occurrence of jaundice is no doubt due to the combination of the arsenic with a benzene nucleus." The quinoline nucleus resembles that of benzene in that its presence may be associated with toxic action on the liver.

REPORT OF CASES

Case 1.—G. B., a man, aged 26, entered St. Elizabeth Hospital, March 8, 1930, in delirium. Three weeks before entrance the father of the patient noticed jaundice of the sclerae and called the son's attention to it. During the next week the jaundice deepened, nausea and vomiting ensued, and he became lethargic. The urine was dark, and, during the three days before admission to the hospital, delirium was present. From the father of the patient it was learned that his son had been taking eight "Atophan" tablets daily for the relief of "rheumatism," which had followed an attack of tonsillitis three months before. No history of indigestion could be obtained.

On physical examination the patient presented a picture of marked icterus and was in mumbling delirium. The temperature was 98.0 F., pulse 96 and respiration 24. The blood pressure was 110 systolic and 84 diastolic. The heart was normal. The bases of both lungs were dull and the breath sounds absent. The area of liver dulness was markedly decreased. The superficial reflexes were present. Edema of the ankles was present, as mentioned by Sutton.[18]

The laboratory data showed the urine to contain bile, a few finely granular casts and a few red blood cells. The erythrocytes numbered 4,500,000, the leukocytes 12,500 with 80 per cent polymorphonuclears. The concentration of hemoglobin was 90 per cent (Dare). The blood and spinal Wassermann tests were negative. The blood platelets numbered 110,000 per cubic millimeter. The coagulation time was seven minutes. The icterus index was 40. The retention of bromsulphalein in sixty minutes was 60 per cent. The nonprotein nitrogen was 46 mg. in 100 cc. of blood.

Dextrose and insulin were given. March 12, 1930, the coma deepened; the temperature rose to 102.3 F. and the pulse to 120. That evening the respiratory rate rose to 36, the chest was full of bubbling râles, and the temperature was 104.3 F. just before the patient died.

The autopsy showed that the patient had been well nourished, with evidence of recent loss of weight. The skin approached a bronze color. The heart was normal. The lungs showed red hepatization of the lower lobes. The liver weighed 680 Gm. and showed myriads of fine yellow nodules studding the surface among a reddish-brown tissue. Microscopically, the liver tissue showed icterus, *necrosis of the parenchyma and cirrhosis* of the liver with compression of the lobules. Marked regeneration of the bile ducts was evident, with fatty infiltration around the lobule periphery.

Cases of Poisoning with Cinchophen

Author	Number of Patients	Died	Recovered	Autopsy
Anderson, S. O., and Teter, O.: J. A. M. A. **93:** 2 (July 13) 1929	1	1	..	1
Brown, L.: Brit. M. J. **2:** 37, 1926	2	2	..	..
Braun, L. I.: J. M. A. South Africa **3:** 157 (March 29) 1929	1	..	1	..
Beaver and Robertson (footnote 16)	5	5	..	5
Cabot (footnote 11)	1	1	..	1
New England J. Med. **205:** 133 (July 16) 1931	1	1	..	1
Dassen, R.: Semana med. **36:** 368, 1929; abstr. J. A. M. A. **92:** 1563 (May 4) 1929	2	..	2	..
DeRezende, Cassio.: Brazil-med. **41:** 1005 (Sept. 24) 1927	3	..	3	..
Danger of "Atophan," London letter, J. A. M. A. **90:** 1229 (April 14) 1929	1	1	..	1
Elliot, A. H.: J. A. M. A. **61:** 1376, 1913	1	1	..	..
Evans (footnote 7)	3	..	3	..
Frenzel, W. C.: Wisconsin M. J. **28:** 264, 1927	1	..	1	..
Gargell, S. L.: New England J. Med. 183 (Jan. 28) 1932	3	..	3	..
Glover (footnote 8)	1	..	1	..
Herrick (footnote 3)	1	..	1	..
Haudek, M.: Wien klin. Wchnschr. **40:** 205 (Feb. 17) 1927	1	..	1	..
Hitzenberger, H.: Wien klin. Wchnschr. **40:** 205 (Feb. 17) 1927	2	1	1	1
Klinkert, D.: Therap. d. Gegenw., July, 1926	1	..	1	..
Klin. Wchnschr. **6:** 24 (Jan. 1) 1927	1	..	1	..
Therap. d. Gegenw. **69:** 140 (March) 1928	1	..	1	..
Kingreen, O.: Deutsche med. Wchnschr. **53:** 971 (Jan. 28) 1927	1	..	1	..
Langdon-Brown (footnote 6)	2	2	..	1
Lowenthal, Mackay and Lowe (footnote 20)	2	2	..	2
Motzfeldt, K.: Norsk mag. f. lægevidensk. **90:** 283 (March) 1929	1	1	..	..
Lind (footnote 19)	1	1	..	1
von Muller (footnote 2)	1	..	1	..
McVicar, C. S., and Wier, J. F.: M. Clin. N. America **12:** 1526, 1929	1	1	..	1
Miller, M.: Gesellch. f. inn. Med. u. Kinderh., Feb. 13 1913; Abstr. Therap. Monatsh. **27:** 468, 1913	1	..	1	..
Phillips (footnote 4)	1	..	1	..
Parsons and Harding (footnote 13)	4	4	..	4
Petty, M. J.: Brit. M. J. **2:** 442, 1928	1	..	1	..
Rabinowitz (footnote 12)	7	4	3	3
M. Clin. N. America **11:** 1025, 1928	2	..	2	..
Rake, G. W.: Guy's Hosp. Rep. **77:** 229, 1927	1	1	..	1
Reichle, H. S.: Arch. Int. Med. **44:** 2 (Aug.) 1929	2	2	..	2
Scully (footnote 14)	1	..	1	..
Schroeder (footnote 5)	17	..	17	..
Stacy, L. J., and Van Zant, F. R.: Minnesota Med. **13:** 281 (May) 1930	1	1	..	1
Singer, S.: Wien klin. Wchnschr. **40:** 238 (Feb. 17) 1927	1	1	..	1
Schwartz, G.: Wien klin. Wchnschr. **40:** 238 (Feb. 17) 1927	1	..	1	..
Sutton (footnote 18)	1	1	..	1
Worster-Drought (footnote 15)	1	..	1	..
Weil, P.: Med. Welt **2:** 257 (Feb. 18) 1928	1	1	..	1
Wells (footnote 10)	1	1	..	1
Willcox (footnote 9)	3	1	2	..
	89	37	52	30

There was no evidence that this young man had any hepatic disease. He had taken about 60 grains (4 Gm.) of "Atophan" daily for three months for relief of pain. The history and the clinical course, with the autopsy, leave little doubt that cinchophen was the toxic agent.

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[13] Parsons, L., and Harding, W. G. 2d: Am. J. M. Sc. **181:** 115-125 (Jan.) 1931.

[14] Scully, F. J.: Idiosyncrasy to Cinchophen, J. A. M. A. **82:** 623 (Feb. 23) 1924.

[15] Worster-Drought, C.: Brit. M. J. **1:** 148 (Jan. 27) 1923.

[16] Beaver, D. C., and Robertson, H. E.: Proc. Staff Meet., Mayo Clin. **6:** 216 (April 8) 1931.

[17] Rotter, L.: Chem. Abstr. **12:** 2384, 1918.

[18] Sutton, D. C.: Acute Yellow Atrophy of the Liver Following the Taking of Cinchophen, J. A. M. A. **91:** 310 (Aug. 4) 1928.

Case 2.—J. P., a man, aged 65, a painter, entered St. Elizabeth Hospital, Jan. 1, 1931, with the complaint of arthritis and jaundice. For four months he had been taking "Atophan," eight tablets daily, for relief of pain. No history of indigestion could be obtained. Two and a half weeks before admission he was obliged to quit work because of progressive weakness, loss of appetite, increasing drowsiness and nausea. Jaundice developed, and in a few days he began to vomit. He noticed that the urine was dark and that it "burnt." He was given "liver tablets" by his physician without relief and a week before admission began to have periods of transient delirium. The urine became diminished in amount, he was unable to take nourishment, incontinence of urine and feces developed, the delirium increased, and the skin became bronzed. The tongue became dry, the lips cracked and he was admitted to the hospital in delirium and had to be mechanically restrained.

The patient was poorly nourished. The temperature was 100.1 F., pulse 84 and respiration 22. The heart and lungs were normal. The blood pressure was 86 systolic and 60 diastolic. The area of liver dulness was greatly diminished. No lead line was seen on the gums. Edema of the hands and feet was observed. The hands showed marked hypertrophic arthritis.

The laboratory data revealed that the urine contained a trace of albumin, bile, and a few finely granular casts. The concentration of hemoglobin was 85 per cent (Dare). The erythrocytes numbered 4,100,000 and the leukocytes 16,000, with 92 per cent polymorphonuclears. No stippling was seen. The blood and spinal Wassermann tests were negative. The nonprotein nitrogen was 62 mg. per hundred cubic centimeters of blood and the creatinine 2.1 mg. The icterus index was 54. The retention of bromsulphalein in sixty minutes was 85 per cent.

Dextrose and insulin were given. The general condition remained unchanged during the next four days. On the fifth day the coma deepened, the temperature rose to 104.4 F., the pulse to 136, a profuse perspiration covered the body, and death followed that evening.

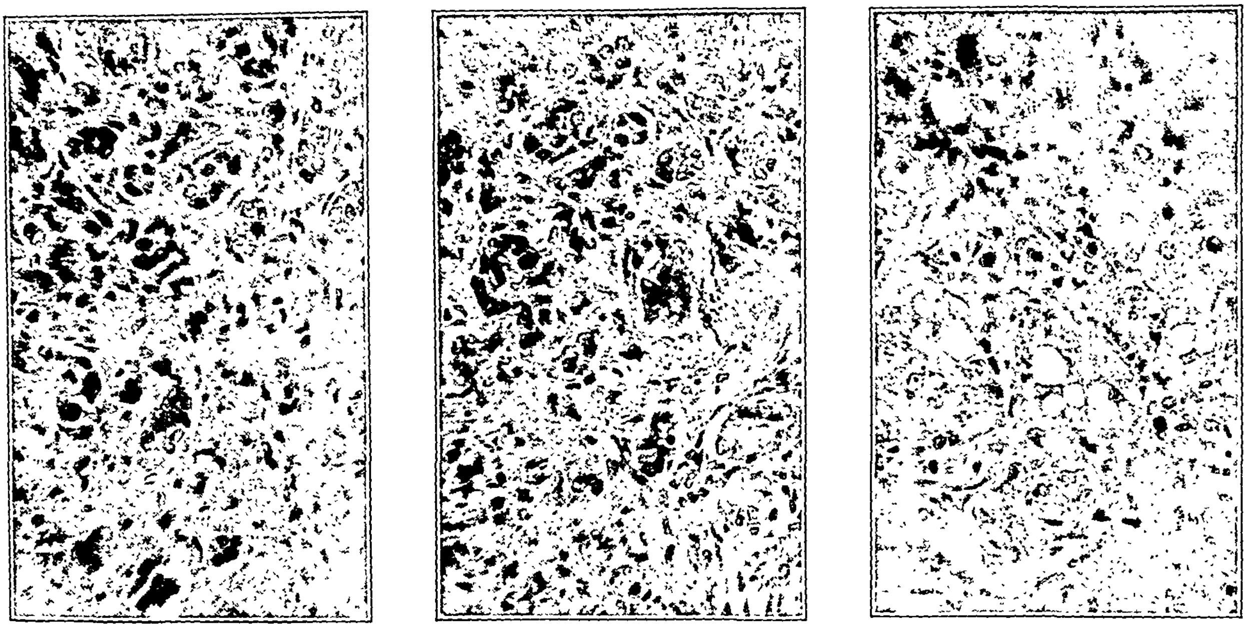
The autopsy revealed that the heart and lungs were normal. The liver was roughly nodular, similar to that in case 1 grossly. The gallbladder, ducts and pancreas were normal. The suprarenals were normal. The kidneys showed slight diffuse nephritis. On section, the liver showed icterus, degenerative necrosis of the parenchyma, increase in connective tissue and compression of regenerated liver lobules into cirrhotic formation. Completely intact lobules were not found.

This is a case of acute toxic cirrhosis in an elderly man without evidence of previous hepatic disease. For fourteen weeks he had taken 60 grains of "Atophan" daily to relieve pain. No other etiologic agent could be demonstrated.

Case 3.—Mrs. E. L., aged 64, entered St. Elizabeth Hospital, Nov. 15, 1931, in coma. Her husband stated that she had been perfectly well except for an attack of "arthritis" in December, 1930, for which she had various treatments. In July, 1931, the pain became worse and she began to take four "Farastan" tablets (Mono-iodo-cinchophen) daily with relief of the pain. She felt well until eleven days before admission, when icterus was noticed in the sclerae. Within twenty-four hours the body was deeply jaundiced, nausea and vomiting occurred, the appetite was lost, and weakness became progressive. The next day she became apathetic and lapsed into coma two days later. There were no previous signs or symptoms of hepatic or biliary tract disease.

The patient was well nourished. She had hypertrophic arthritis of the hands. The temperature was 99.0 F., pulse 96 and respiration 22. The heart and lungs were normal. The blood pressure was 118 systolic and 88 diastolic. The liver dulness was diminished. The remainder of the physical examination was negative.

The day after admission, the icterus index was 40. The van den Bergh test gave an immediate direct reaction. The retention of bromsulphalein in sixty minutes was 70 per cent. Nonprotein nitrogen was 44 mg. and urea nitrogen 28 mg. per hundred cubic centimeters of blood. During the next four days, in spite of dextrose, insulin and fluids, the course was down hill and she died with a terminal rise in temperature to 104.3 F. and a profuse perspiration over the entire body.


Case 1
Case 2
Case 3

Microscopic appearance of liver.

The autopsy was done at the patient's home in a neighboring town and only inspection of the abdominal cavity was permitted. The liver was high under the diaphragm, the size of a large orange. The surface was nodular, with many fine yellow areas interspersed among a reddish-brown tissue. A portion was removed for microscopic study. The gallbladder, ducts and pancreas were normal. Microscopically there was seen extensive necrosis of the parenchyma with diffuse increase in connective tissue and compression of the liver lobules into nodular formation, very similar to case 2.

This elderly woman had no previous hepatic or biliary disease. Acute toxic cirrhosis developed after taking 14 grains (0.9 Gm.) of "Farastan" daily for about four months. No other etiologic agent could be demonstrated.

COMMENT

A study of the cases of cinchophen poisoning in the literature reveals that the toxic manifestations have no relation to the amount of the drug ingested. Thus, the patient of Evans[7] took only 15 grains (1 Gm.) the second patient of DeRezende only 3 Gm. and the patient of Lind[19] about 5 Gm. Conversely, Hench and Rowntree, discussing Rabinowitz's[12] cases, report a patient who took large amounts (from 40 to 90 grains, or 2.6 to 6 Gm.) daily for a period of eighteen years without untoward effect. Rabinowitz suggests that certain predisposing factors exist which sensitize the liver parenchyma to the toxic action of cinchophen compounds. Among these factors he names gallbladder disease, cirrhosis of the liver, chronic alcoholism, pregnancy, chronic nephritis and a past history of jaundice. Again, other cases (here reported) give no clinical, laboratory or postmortem evidence of liver dysfunction. So-called safe methods of giving the drug, as intermittently, with sodium bicarbonate and the like are not without hazard, since Willcox[9] and Lowenthal[20] observed toxicity arising following these measures.

Owing to the increased number of cases of toxic hepatitis being reported in the literature due to cinchophen compounds, and to the lack of a safe method of administering the drug, it would seem logical to employ, as analgesics, compounds devoid of the insidious danger of poisoning.

SUMMARY AND CONCLUSIONS

1. Eighty-nine cases of hepatotoxicosis due to cinchophen or its congeners were collected in the literature. Fifty-two patients recovered. Thirty-seven fatal cases are reported with the diagnosis confirmed by autopsy in thirty cases. I observed three additional fatal cases, with postmortem examination.
2. Cinchophen and its compounds exert a destructive toxic effect on the hepatic parenchyma of certain sensitized persons. The essential clinical and pathologic observations are those of a specific type of toxic cirrhosis.
3. It seems apparent that the extensive employment of cinchophen compounds in the treatment of "arthritis" should be abandoned in favor of less hazardous preparations.

Harries Building.

DIABETIC COMA WITH BLOOD SUGARS ABOVE ONE THOUSAND MILLIGRAMS: REPORT OF THREE CASES WITH RECOVERY FOLLOWING TREATMENT

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Philadelphia

A case of diabetic coma with a blood sugar of 900 mg. per hundred cubic centimeters of blood was reported recently by Gray and Sansum.[1] Attention was drawn to the relatively few cases that have been reported in which recovery followed such a marked hyperglycemia. They were able to find only three cases besides their own. There can be no doubt that such cases are rare, but we feel that if all the unreported cases were collected the number would be somewhat increased. We here report three cases that were successfully treated in the metabolic ward of the Philadelphia General Hospital during the past five years.

Case 1.—M. M., a woman, aged 58, white, was admitted in coma, with no history of diabetes. Members of the family stated that in the past six months she had lost 40 pounds (18 Kg.), in spite of a voracious appetite, and that she had frequently complained of weakness. There was also a history of thirst and polyuria. Two days before admission she became nauseated and vomited several times. She had been in coma eight hours before she arrived at the hospital.

The temperature was 96 F.; the pulse, 150. Respirations were 35. The blood pressure was 80 systolic and 25 diastolic.

Breathing was Kussmaul in type. There was markedly decreased intra-ocular tension. There was a heavy odor of acetone on the breath. The lungs were clear. The heart sounds were distant and quite rapid. There were no murmurs. Examination of the abdomen did not reveal palpable organs or masses. The extremities were limp and flaccid.

The blood sugar was 1,120 mg. per hundred cubic centimeters of blood on admission; the urea nitrogen of the blood, 45 mg., and the creatinine, 1.5 mg. The urine was strongly positive for sugar, acetone and diacetic acid, with a heavy trace of albumin and many hyaline and granular casts.

Examination of the blood revealed: Red blood cells, 3,500,000; hemoglobin, 13.6 Gm.; white blood cells, 13,600; polymorphonuclears, 87 per cent; lymphocytes, 13 per cent.

The Wassermann reaction of the blood was reported negative in all antigens.

In addition to blankets and hot water bottles, soap sud enemas, gastric lavage, digitalis hypodermically, and hypodermoclysis of 1,500 cc. of 5 per cent sodium bicarbonate[2] and 1,500 cc. of physiologic solution of sodium chloride, the patient received 230 units of insulin, 180 of which was given intravenously during the eight hours following admission. The patient became conscious during the night and was able to take fluids and orange juice by mouth. Blood sugar determinations, by the Folin-Wu technic, were as follows: 1,120 mg. at 8:30 a. m. (on admission); 960 mg. at 11 a. m.; 800 mg. at 1:45 p. m.; 560 mg. at 4:30 p. m.; 80 mg. at 11 p. m.; 478 mg. at 7 a. m., and 150 mg. at 7 a. m.

The patient was discharged in three weeks on a diet of 60 Gm. of protein, 220 Gm. of fat, and 80 Gm. of carbohydrate; with an insulin dosage of 15 units before breakfast and 10 units before supper, and a fasting blood sugar of 125 mg.

Case 2.—H. H., a woman, aged 30, a Negress, with no history of diabetes before the onset of coma, had been vomiting for two days and was comatose for twelve hours before admission. Symptoms of polyuria, polydipsia and polyphagia could not be obtained from the husband.

The temperature was 97 F.; the pulse, 160; the respiratory rate, 30.

Breathing came in long sighing gasps. The tongue and mouth were dry. The skin was parched and wrinkled. The eyeballs were soft. The pupils were unequal and did not react to light. Some impairment was found over the lower right side of the chest, with a few fine, moist râles. The heart was not enlarged to percussion. Heart sounds were rapid but regular; there were no murmurs.

Blood sugar on admission was 1,080 mg. per hundred cubic centimeters of blood, with a carbon dioxide combining power of 11 volumes per cent. The urea nitrogen of the blood was 21 mg. Examination of the urine showed 4.4 per cent sugar; the urine was positive for acetone and diacetic acid, with a heavy cloud of albumin and many hyaline and granular casts.

The Wassermann reaction of the blood was + + + + in all antigens.

Table 1.—*Blood Sugar and Carbon Dioxide Combining Power in Case 2*

Blood Sugar, Mg.		CO_2 Volumes, Per Cent	Time
1,080	(Folin-Wu technic)..	11	6:00 p. m. (on admission)
900	....	15	8:00 p. m.
332	....	20	10:30 p. m.
71	....	49	3:00 a. m.
140	....	63	7:00 a. m.
152	....	49	10:30 a. m.
203	....	60	3:00 p. m.

Treatment consisted of external heat, gastric lavage with 2 per cent sodium bicarbonate, soap suds enemas, hypodermoclysis of 1,000 cc. of 5 per cent sodium bicarbonate[2] and 1,000 cc. of physiologic solution of sodium chloride, with 500 cc. of 5 per cent sodium bicarbonate and 20 Gm. of dextrose by proctoclysis. During the night, from 6 p. m. until 7 a. m., the patient received 300 units of insulin, 100 of which was given intravenously as the initial dose. The patient was not conscious until the following afternoon, despite the fact that her blood sugar the next morning was 140 mg., and the carbon dioxide combining power 63 volumes per cent. She received a total of 50 units of insulin during the remainder of the day. The blood sugar and carbon dioxide combining power are given in table 1.

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[19] Lind, S. C.: Ohio State M. J. **95**: 1228-1232 (Jan.) 1932.

[20] Lowenthal, L. J. A.; Mackay, W. A., and Lowe, F. C.: Brit. M. J. **1**: 592 (April 7) 1928.

From the Division of Metabolic Diseases, Philadelphia General Hospital.

[1] Gray, P. A., and Sansum, W. D.: Diabetic Coma with Marked Hyperglycemia and Recovery, J. A. M. A. **97**: 230 (July 25) 1931.

[2] This procedure has been discontinued for the past two years, owing to an unfortunate slough which resulted from the conversion of sodium bicarbonate to sodium carbonate in the process of sterilization. At present sodium bicarbonate is given through a "Levin gastroduodenal" tube, which is left in place during the entire treatment of coma.

The patient was discharged on a diet of 60 Gm. of protein, 180 Gm. of fat and 100 Gm. of carbohydrate, with an insulin dosage of 10 units before breakfast and 10 units before supper, and a fasting blood sugar of 133 mg. per hundred cubic centimeters of blood.

Case 3.—C. R., a Negress, aged 46, was not known to have diabetes. The history obtained from the family was that for the past two months the patient had suffered from polyphagia, polydipsia, polyuria and nocturia and had lost 32 pounds (14.5 Kg.) during this time. No medical advice was sought until the onset of coma. The patient was comatose for eleven hours before admission to the hospital.

The temperature was 96.5 F.; the pulse, 120; the respiratory rate, 25; the blood pressure, 90 systolic and 50 diastolic.

Table 2.—*Insulin Given in Case 3*

Units			
40	Intravenously	10:45 p. m.	(on admission)
40	Subcutaneously	11:15 p. m.	
40	Subcutaneously	11:50 p. m.	
40	Subcutaneously	12:20 p. m.	
40	Subcutaneously	1:20 a. m.	
50	Subcutaneously	2:00 a. m.	
30	Subcutaneously	4:00 a. m.	
20	With orange juice, 275 Gm.	7:00 a. m.	
Total, 300			

The patient was in deep coma; there was no response to external stimuli. Respirations were rapid, full and regular. There was a urinoid odor to the breath, but no acetone was detectable. The eyeballs were soft and compressible. The mouth was dry and the teeth were dirty. The skin was quite dry and dehydrated. Movements of the chest were diminished on the right side. The percussion note was impaired in both axillae. Breath sounds were harsh in the right axilla, with a few crackling râles. The pulse was almost imperceptible, and there was no enlargement of the heart on percussion. Sounds were rapid and distant. There were no audible murmurs. There was some rigidity in the lower left quadrant of the abdomen. There was a profuse purulent vaginal discharge, with excoriation and ulceration of the vulva of the left side. The extremities showed nothing of interest except marked diminution of the reflexes.

Table 3.—*Blood Sugar and Carbon Dioxide Combining Power in Case 3*

Blood Sugar, Mg.		CO_2 Volume, Per Cent	Time	
1,056	(Folin-Wu technic)	18	10:50 p. m.	6/12/31
1,296		12	11:55 p. m.	
960		14	11:30 p. m.	
600		14	3:30 a. m.	
338		25	5:30 a. m.	
140		19	7:00 a. m.	6/13/31
131		23	10:00 a. m.	
70		37	3:00 p. m.	
232		57	9:00 p. m.	
208		61	7:00 a. m.	6/14/31

Blood sugar on admission was 1,056 mg. per hundred cubic centimeters with a carbon dioxide combining power of 18 volumes per cent. One hour and five minutes later the blood sugar had risen to 1,296 mg. per cent and the carbon dioxide fallen to 12 volumes per cent in spite of the administration of 120 units of insulin, 40 of which had been given intravenously. The urea nitrogen of the blood was 55 mg.

Examination of the blood revealed: Red blood cells, 5,500,000; hemoglobin, 16.4 Gm.; white blood cells, 27,700; polymorphonuclears, 82 per cent; lymphocytes, 16 per cent; large lymphocytes, 2 per cent.

The urine was strongly positive for sugar, acetone and diacetic acid, with a heavy trace of albumin and myriads of leukocytes (catheterized specimen).

The Wassermann and Kahn reactions of the blood were strongly positive.

Treatment consisted of blankets and hot water bottles, soap suds enemas, gastric lavage of 2 per cent sodium bicarbonate, hypodermoclysis of 3,000 cc. of physiologic solution of sodium chloride, digitalis and caffeine sodium benzoate hypodermically, sodium bicarbonate, 30 grains (2 Gm.), every hour through the Jutte tube until 11 a. m. the next day, and insulin as shown in table 2.

The blood sugar determinations and the carbon dioxide combining power are shown in table 3.

June 13, 1931, a diagnosis of pneumonia was quite apparent and a roentgenogram taken with a portable machine showed consolidation of the lower portion of the right upper lobe. Urea nitrogen of the blood had risen to 80 mg., with a creatinine determination of 3.4 mg. Since 4 a. m. the patient had been noisy and irrational, but at 5 p. m. had become quiet and was resting comfortably. The patient received 830 Gm. of orange juice in addition to 2,500 cc. of physiologic solution of sodium chloride by hypodermoclysis during the day.

June 14, fasting blood sugar was 208 mg.; the carbon dioxide combining power, 61 volumes per cent; urea nitrogen, 33 mg., and creatinine 1.4 mg.

Recovery from the pneumonia was uneventful and the patient was discharged forty-five days after admission on a diet of 60 Gm. of protein, 150 Gm. of fat and 100 Gm. of carbohydrate, with an insulin dosage of 8 units before breakfast and 5 units before supper.

SUMMARY

1. In three cases of diabetic coma with very high blood sugar, recovery occurred.
2. We believe that clinicians have failed to report other cases.
3. We warmly endorse the administration of sodium bicarbonate as an adjunct to insulin. In our experience, we have never seen harmful results from its administration by means of a stomach tube during the treatment of diabetic coma.

803 Pine Street.

DERMATITIS VENENATA DUE TO SHOE LEATHER

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Los Angeles

Lewis[1] has recently reported two cases of dermatitis affecting the feet and ankles, in which the causative agent was definitely proved to be shoe leather. The following case is reported to point out that not all eruptions of the feet are of fungous origin and that other factors must be considered.

REPORT OF CASE

W. S., a man, aged 60, seen, Jan. 12, 1932, had an eruption on the feet which had been present for the past seven months. He had been under the care of several physicians, who had made various diagnoses, including eczema and fungous infection, and had applied various ointments together with twelve ultraviolet ray treatments.

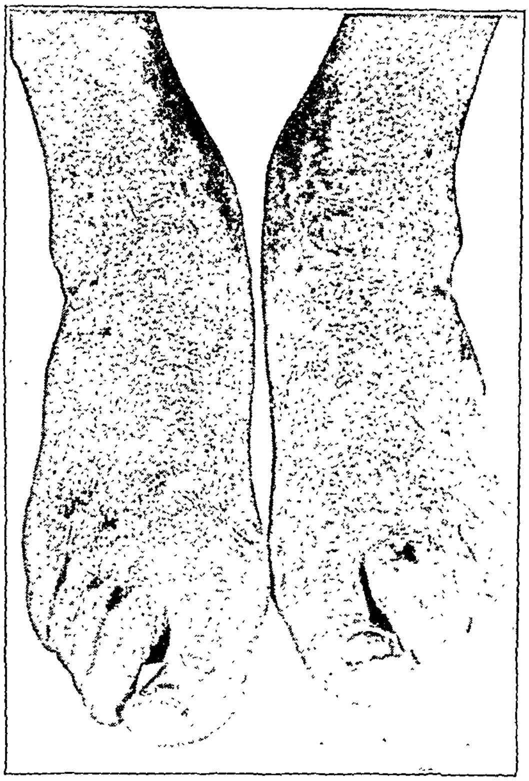
There was a marked erythema of both feet on the dorsum, sides and ankles, extending up the ankle to the level of the shoe top and abruptly ending. There were large, thick scales, the size of a finger nail, and crusts beneath which there was a good deal of fissuring and oozing. There was no maceration or scaling between any of the toes.

The following history was obtained: In February, 1931, the patient purchased a new pair of black shoes which were ordered from a distant manufacturer. These shoes were worn on Sundays and occasionally in the evenings. The last week in June, 1931, an eruption began on the dorsum of the feet as a redness, which shortly became vesicular and started to ooze. He continued to wear these shoes at occasional intervals. His feet became so swollen and sore that for three or four days at a time it was impossible to wear any shoes. About every seven to ten days the entire process of itching, burning, redness, swelling and oozing would be repeated, although the feet were never entirely free from the eruption since the onset. About six or eight weeks previous to the time we first saw him, he noticed a moderately erythematous, scaly eruption on the wrists and forearms. He had never had the shoes dyed, nor did he believe that his feet had ever been wet while wearing the shoes. His feet, as a rule, perspired only moderately.

From the Department of Dermatology, College of Medical Evangelists.

[1] Lewis, G. M.: Dermatitis Venenata from Shoe Leather, Arch. Dermat. & Syph. **24**: 602 (Oct.) 1931.

A leather piece the size of a postage stamp was removed from one of the shoe tongues, the inner cotton fabric lining was removed from the leather, and both pieces were applied to the inner surface of the forearm where the skin was normal. These were removed at the end of twenty-four hours and no reaction was present. The following day both areas were markedly erythematous with small vesicles and since then these two test areas had passed through the same stages of eruption as noted on the feet. These positive "patch test" reactions were still visible six weeks later. A control patch test done on a normal person with the same leather and lining was negative. No fungi were demonstrated from between the toes or from the scales.



Dermatitis venenata due to shoe leather.

Treatment consisted of avoidance of this particular pair of shoes and the application of soothing lotions and ointments. The arms have entirely cleared, the feet are nearly well, and there has been no exacerbation since the patient stopped wearing the shoes.

2007 Wilshire Boulevard.

Economic Burden of Mental Disease.—The economic burden due to mental disease has been called to the attention of the people of New York State during the past eight years by three campaigns on behalf of proposals for bond issues for the building of state institutions. The proposals, all of which were approved by the voters, provided, in 1923, for a bond issue of $50,000,000 for state hospitals and other institutions; in 1925, for a bond issue of $100,000,000 for state institutions and other improvements, to be made available at the rate of $10,000,000 a year; and in 1930, for a bond issue of $50,000,000 for state hospitals and state prisons. About $90,000,000 of the proceeds of these bond issues has been or will be devoted to the construction of hospitals for patients with mental disease. Another phase of the burden was emphasized by the appropriation, in 1931, of nearly $24,000,000 for the maintenance of patients with mental disease in the hospitals of the New York State Department of Mental Hygiene.—Pollock, H. M.: Economic Loss to New York State and the United States on Account of Mental Disease, 1931, *Ment. Hyg.* **16**:289 (April) 1932.

Special Article

THE PRESENT STATUS OF VITAMIN B_2 (G)

HISTORICAL SURVEY

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[EDITORIAL NOTE.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

During the last few years it has been definitely established that the dietary factor which McCollum and Kennedy[1] in 1916 termed water soluble B, generally recognized as a growth-promoting and appetite stimulating substance, is a mixture of vitamin B or vitamin B_1 and G or B_2. One of these is relatively thermolabile and has antineuritic and growth-promoting properties; the other is more stable after heating under pressure and also possesses growth-promoting properties and functions in the prevention and cure of pellagra-like symptoms in the rat. The former is also referred to as the antiberiberi, and the latter as the antipellagric vitamin. The nomenclature of these two dietary essentials has not yet been finally settled. The American biochemists have adopted the letter B for the antiberiberi factor and the term G for the antidermatitis vitamin.[2] In this communication the term B_2, tentatively adopted by the biochemists of England, will be employed to represent the antipellagric vitamin.[3]

As early as 1919, Mitchell[4] wrote an excellent review of the literature on the subject of vitamin B and questioned the identity of the antineuritic factor of Eijkman,[5] Grijns[6] and Funk[7] with the growth-promoting substance of McCollum and Kennedy.[1] Although Mitchell did not submit any experimental evidence, his critical analysis was so sound that his paper served as a great stimulus for further fruitful research. His arguments were as follows: 1. The green vegetables, such as cabbage and spinach, are rich sources of water-soluble B, compared with whole cereal grains, but are low in the concentration of the antineuritic factor. The carrot was given as another illustration of a fairly rich source of the growth-promoting factor for the rat but deficient in the antineuritic substance essential for the prevention and cure of polyneuritis in the pigeon.

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1. McCollum, E. V., and Kennedy, Cornelia: J. Biol. Chem. **24**:491 (April) 1916.
2. Report of Committee on Vitamin B Terminology of American Society of Biological Chemists: Science **69**:276 (March 8) 1929.
3. This nomenclature has been adopted in this paper in accordance with wishes of the Council on Pharmacy and Chemistry.
4. Mitchell, H. H.: J. Biol. Chem. **40**:399 (Dec.) 1919.
5. Eijkman, Christiaan: Polyneuritis bij hoenderen, Geneesk. Tijdschr. v. Nederl. Indië **36**:214, 1896. Note sur la prophylaxie du béribéri, Janus **2**:23, 1897; Ein Versuch zur Bekämpfung der Beriberi, Virchows Arch. f. path. Anat. **149**:187, 1897.
6. Grijns, Gerrit: Polyneuritis gallinarum, Geneesk. Tijdschr. v. Nederl. Indië **41**:3, 1901.
7. Funk, Casimir: J. Physiol. **43**:395, 1911; **45**:75, 1912.

2. The paralytic symptoms observed in rats on vitamin B-deficient diets are not specific for this avitaminosis. 3. There is a lack of carefully controlled experiments on solubility and thermostability of the two substances, so it is impossible to make definite conclusions as to their identity or nonidentity.

In 1920 there appeared a paper by Emmett and Luros,[8] entitled "Are the Antineuritic and the Growth-Promoting Water-Soluble B Vitamins the Same?" in which they presented evidence that the "antineuritic factor (pigeons)" is totally destroyed when heated for two hours at 120 C. and 15 pounds pressure, while the "water-soluble B vitamine (rats)" appears to be stable to heat under such treatment. From these observations they tentatively suggested that the antineuritic (pigeons) and the growth-promoting (rats) factors are not the same and that "it would be better to consider them as different until there is further proof to the contrary." This work constituted the first experimental evidence concerning the dual nature of what is now known as the vitamin B complex, but apparently this paper did not for some years receive the attention it duly deserved.

In 1923, Levene and Muhlfeld[9] reported a considerable variation in distribution of the antineuritic and growth-promoting principles in various samples of brewers' and bakers' yeasts, from which results they concluded that these two dietary essentials may not be identical.

In February, 1926, Smith and Hendrick[10] presented the first convincing evidence, followed later in the same month by Goldberger, Wheeler, Lillie and Rogers,[11] demonstrating the dual nature of vitamin B.

While engaged in the study on the effect of dietary deficiencies on experimental tuberculosis in the albino rat, Smith and Hendrick found that a diet composed of 40 per cent rolled oats (6 per cent protein) plus 10 per cent purified casein, fortified with vitamin A[12] and inorganic salts, failed to produce normal growth. However, such a dietary regimen was successfully supplemented by dried brewers' yeast autoclaved for six hours at 15 pounds pressure, which procedure completely destroyed vitamin B. They therefore concluded that dried brewers' yeast contains some factor other than vitamin B.

Goldberger and his associates demonstrated that autoclaved dried bakers' yeast (Fleischmann's wort-grown, low temperature), as a source of "water-soluble B" produced in rats rapid loss of weight, with or without polyneuritis, and, although an alcoholic extract of corn meal did alleviate or cure polyneuritis in the rat, the slight initial growth was followed by an arrest and subsequently by a decline of growth. However, if rats, fed a diet satisfactory in every respect with the exception of water-soluble B, were given a combination of small proportions of the autoclaved yeast and the extract of maize meal, the animals made considerable growth. The autoclaved yeast, as well as fresh lean beef or dried lean beef, they found potent for the prevention and cure of human pellagra and a pellagra-like disease in the dog, black tongue. They provisionally named this relatively stable dietary substance P-P, or pellagra-preventive. Young rats, fed a diet containing 20 per cent of dried or fresh lean beef as the only source of vitamin B, declined in weight and died with or without polyneuritis. When signs of polyneuritis began to appear, if there was introduced in such a diet 5 per cent of the alcoholic corn extract (40 per cent of which, as the only source of vitamin B in the ration, did not permit growth in the rat), the animals, if they had not reached the premortal state, were cured of the polyneuritis and resumed growth. These investigators therefore concluded that the alcoholic extract of maize contains an essential that cures polyneuritis in the rat and, while not growth-promoting in itself, permits or promotes growth when combined in a diet otherwise complete for growth except for "water-soluble B" with a suitable proportion of a P-P containing substance, such as autoclaved yeast or beef (which in itself, within certain limits, neither prevents polyneuritis nor permits growth).

In May, 1926, Goldberger and Lillie[13] described their experiences in the experimental production of pellagra-like symptoms in the rat on a diet in which an 85 per cent alcoholic extract of corn served as the only source of vitamin B. The following is a description, in part, of the main symptoms they encountered:

> After a variable period following the arrest of growth, there has been observed in many of the animals so fed a tendency of the lids of one or both eyes to adhere together with, in some instances, an accumulation of dried secretion on the margin of the lids. [Following the appearance of the ophthalmia or at the time the eye lesions made their appearance, alopecia developed in most of the animals, and in some animals it has led to almost complete denudation of the head, neck and trunk.] With or without such loss of fur some of the animals have developed a dermatitis at one or more of the following sites: ears, front of neck and upper part of chest, forearms, backs of forepaws, shins, and backs of the hind paws. This dermatitis, particularly as it has affected the paws, forearms, neck and ears, has been sharply outlined as bilaterally symmetrical. . . . The ears seemed definitely reddened and thickened with what appeared to be a yellowish incrustation of dried serum. In healing, desquamation took place, leaving the skin of the pinna with a polished, glistening, somewhat parchment-like appearance. . . . In the cases in which the backs of the forepaws were affected, the skin was red and rough and, after healing, but before the renewal of the normal, fine, silky fur, the skin had a pale pink, glistening, new-skin appearance. The backs of the hind paws, when affected, presented at first an appearance as of a matting of the silky fur of this part, which then looked dull and thickened. Later this matted layer of fur began to fissure and crack and then gradually desquamated, leaving a denuded pale pink, glistening skin.

The shortest period for the production of this dermatitis was approximately seven weeks. In addition to the skin lesions, Goldberger and Lillie found a stomatitis comparable to that found in pellagra. These pellagra-like symptoms in the rat were cured by the inclusion in the diet of a fullers' earth adsorbate of yeast, which resulted in the clearing up of the lesions and was accompanied by a resumption of growth. The following are the conclusions of these investigators: "We may conclude, therefore, that while it is, on the whole, highly probable that the pellagra-like condition in the rat is the analogue of pellagra in man, it will require additional evidence to establish this beyond reasonable doubt."

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[8] Emmett, A. D., and Luros, G. O.: J. Biol. Chem. **43**: 265 (Aug.) 1920.

[9] Levene, P. A., and Muhlfeld, M.: J. Biol. Chem. **57**: 341 (Sept.) 1923.

[10] Smith, M. I., and Hendrick, E. G.: Pub. Health Rep. **41**: 201 (Feb. 5) 1926.

[11] Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: Pub. Health Rep. **41**: 297 (Feb. 19) 1926.

[12] The existence of vitamin D had not been disclosed at that time.

[13] Goldberger, Joseph; and Lillie, R. D.: Pub. Health Rep. **41**: 1025 (May 28) 1926.

In 1917, Chittenden and Underhill[14] reported a dietary disease in the dog which closely resembles human pellagra. The nitrogen of the diet on which this disease was produced was derived mainly from boiled peas. The rest of the constituents of the ration contained cracker meal and cottonseed oil. The main symptoms noted were anorexia, intensive salivation, foul mouth, bloody diarrhea and convulsions. From the recent observations of Underhill and Mendel[15] it is evident that this canine disease is of an entirely different character from the black tongue described by Goldberger and Wheeler.[16] Underhill and Mendel found the curative agent for their disease to be contained in butter fat, carrots and carotene and have concluded that the dietary factor deficient in their disease is probably associated with the carotenoids, while Goldberger and Wheeler[16] concluded that the missing constituent in their diet on which black tongue is produced is the antipellagric factor found in yeast and lean beef.

In August, 1926, Hauge and Carrick,[17] independently, made a differentiation between the water-soluble growth-promoting and antineuritic substances, based on their experiences in feeding experiments with baby chicks. They found that the particular yeast they employed was poor in the antineuritic substance but rich in the water-soluble growth-promoting substance, while corn was relatively rich in the antineuritic substance but poor in the growth-promoting substance. The authors stated: "It is concluded that the antineuritic vitamin and the water-soluble growth-promoting vitamin are not identical, although they may occur in the same food."

In 1927, Chick and Roscoe[18] of England corroborated the main observations of Goldberger and Lillie,[13] designating the stable factor as B_2. They suggested that they might be dealing with more than one dietary deficiency, for animals deprived of B_2 occasionally remained stunted in growth but showed no especial dermatitis.

In 1927 there also appeared the confirmatory evidence of Salmon[19] and of Sherman and Axtmayer[20] of this country.

Salmon prepared a fullers' earth fraction which prevented experimental polyneuritis of pigeons but did not induce growth of rats. The residue, which possessed extremely weak antineuritic or growth-promoting action when fed alone, had a marked growth-promoting action when added to the antineuritic fraction.

Salmon also found the seeds of the velvet bean and soy bean to have a higher antineuritic value than the leaves of these legumes, but his comparative tests showed these leaves to be more potent than the seeds in the growth-promoting action.

Sherman and Axtmayer[20] reported a supplementary relation between whole wheat and dried skimmed milk but no such supplementary relation between the dried milk and the autoclaved yeast. Hence, they concluded that milk is relatively richer in vitamin B_2 than in vitamin B_1.

In 1930, Norris and Ringrose[21] reported the occurrence of "a pellagrous-like" syndrome in chicks, which they cured with autoclaved yeast.

PHYSICAL AND CHEMICAL PROPERTIES

Thermostability.—In 1930, Chick and Copping[22] and Chick and Roscoe,[23] in quantitative studies, demonstrated that the "so-called stable antipellagric factor" becomes unstable in an alkaline medium when heated for certain periods at a temperature of from 122 to 125 C. At p_H 5.0 no loss in vitamin B_2 potency could be detected on heating yeast for two hours at from 90 to 100; about 50 per cent was lost on heating the yeast for from four to five hours at 123; at p_H 3.0 the loss was the same with yeast and with a yeast extract. When the reaction was alkaline (p_H 10-9.5), about 30 per cent of the vitamin B_2 originally contained in the yeast extract was lost in ten days at room temperature (summer). On heating for two hours at from 98 to 100 (p_H 8.3), the loss was about 50 per cent and on autoclaving for from four to five hours at 122-125 (p_H 8.3-10), between 75 and 100 per cent.[23]

Fractionation and Concentration.—In 1928, Salmon, Guerrant and Hays[24] reported their results of studies on the effect of hydrogen ion concentration on adsorption of the active factors of vitamin B complex by fullers' earth and found that the maximum adsorption of B_1 was obtained in a zone between p_H 3.0 and p_H 5.5, with the optimal point at p_H 4.0. The maximum adsorption of B_2 by fullers' earth occurred at p_H 0.08, the most acid solution tested.

In 1927, Kinnersley and Peters[25] perfected a method for the preparation of a vitamin B concentrate from yeast, which can be summarized as follows: After making an aqueous extract, inert ingredients are removed first with neutral lead acetate, followed by mercuric sulphate. After the separation of the metals from the solutions, the filtrate is brought to a p_H of 7.0 with sodium hydroxide and the vitamin adsorbed on purified norite, which is an activated charcoal. The vitamin is then released from the norite by repeated extraction with tenth normal hydrochloric acid.

In 1928, Chick and Roscoe[26] stated that they found this concentrate, which Kinnersley and Peters[25] named torulin, to be very potent in B_1 but practically deficient in B_2 and, employing this B_1 extract, perfected a method for the determination of B_2 in food materials, which will be described briefly later in the text.

In a recent attempt to separate vitamin B_2 from vitamin B_1 in yeast, Chick and Roscoe[27] found that vitamin B_2 is insoluble and vitamin B_1 is soluble, in alcohol of 92 per cent by weight. The method used to produce a separation with strong alcohol destroyed vitamin B_2. The attempt to prepare a vitamin B_2 concentrate free from vitamin B_1 by the use of alcohol resulted in failure.

Reaction with Nitrous Acid.—In 1928, Levene[28] reported that by means of nitrous acid the activity of the heat-stable factor is destroyed, whereas that of the heat-unstable factor remains intact. These observations were not confirmed by Chick,[29] in 1929, who found that a vitamin B_2 preparation from yeast possessed the same potency after as before treatment with nitrous acid, when tested on young rats. The recent conclusions of Sherman and Whitsitt[30] are essentially in harmony with those of Chick; namely, that vitamin B_2 in itself is stable toward nitrous acid. They state, however, that they found that "certain conditions of loss of vitamin B_2, as in the work of Levene and in certain parts of our own work, may perhaps better be considered as indicating more or less destruction of the newer and not yet clearly defined factors which are now being found to be essential for the growth of rats." The final conclusion of the latter investigators is that vitamin B_1 behaves in vitro more like a nitrogenous base and vitamin B_2 more like a neutral organic substance.

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[15] Underhill, F. P., and Mendel, L. B.: Am. J. Physiol. **83:** 589 (Jan.) 1928.

[16] Goldberger, Joseph; and Wheeler, G. A.: Pub. Health Rep. **43:** 172 (Jan. 27) 1928.

[17] Hauge, S. M., and Carrick, C. W.: J. Biol. Chem. **69:** 403 (Aug.) 1926.

[18] Chick, Harriette; and Roscoe, Margaret H.: Biochem. J. **21:** 698, 1927.

[19] Salmon, W. D.: J. Biol. Chem. **73:** 483 (June) 1927.

[20] Sherman, H. C., and Axtmayer, J. H.: J. Biol. Chem. **75:** 207 (July) 1927.

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[22] Chick, Harriette; and Copping, Alice M.: Biochem. J. **24:** 932, 1930.

[23] Chick, Harriette; and Roscoe, Margaret H.: Biochem. J. **24:** 105, 1930.

[24] Salmon, W. D.; Guerrant, N. B., and Hays, I. M.: J. Biol. Chem. **80:** 91 (Nov.) 1928.

[25] Kinnersley, H. W., and Peters, R. A.: Biochem. J. **21:** 777, 1927.

[26] Chick, Harriette; and Roscoe, Margaret H.: Biochem. J. **22:** 790, 1928.

[27] Chick, Harriette; and Roscoe, Margaret H.: Biochem. J. **23:** 504, 1929.

[28] Levene, P. A.: J. Biol. Chem. **79:** 465 (Oct.) 1928.

RELATION TO NUTRITION

Quantitative Biologic Method of Determination.—In 1928, Chick and Roscoe[26] developed the following biologic method for the evaluation of vitamin B_2 in food materials: Young rats, about 4 weeks old and *weighing from 40 to 50 Gm., are placed on a basal diet,* satisfactory in every respect with the exception of vitamin B. They are kept on this ration for ten days and are then separated in individual cages with raised screens to prevent coprophagy.[31] After a preliminary period of two weeks of vitamin depletion, a daily dose of 0.1 cc. of the antineuritic concentrate of Kinnersley and Peters[25] (equivalent to 0.6 Gm. of the original yeast, dry weight) is administered to provide an abundance of vitamin B_1, and only negligible traces of vitamin B_2. After from three to four weeks from the beginning of the experimental feeding, the young rat is ready for the assay of vitamin B_2 in any material. The minimum dose which gives an average weekly increase of from 10 to 12 Gm. is considered the vitamin B unit for comparison.

In 1929, Bourquin[32] described a biologic procedure which is a modification of the quantitative method of Sherman and Spohn[33] developed for the vitamin B complex. *Her diet consisted of purified casein, 18;* Osborne and Mendel salt mixture, 4; butter fat, 8; cod liver oil, 2; corn starch, 68, a part of which carried an alcoholic extract of whole wheat for each hundred grams of diet as a source of B_1. The whole wheat presumably furnished insignificant amounts of B_2. Young rats, from 28 to 29 days of age, are placed on this diet for from fourteen to eighteen days and are confined in individual cages with raised screen bottoms until they cease to grow, when the test period is begun. One animal from each litter is kept on the basal diet minus the alcoholic extracts of whole wheat which serves as a negative control. The gain in weight of the test animals over that of the controls indicates the relative amounts of vitamin G present in the materials fed. The vitamin B_2 unit is described as the average gain of 3 Gm. weekly per animal for a period of eight weeks, or a gain of 24 Gm. per animal for the test period.

Recently Munsell[34] reported that more regular and dependable results can be obtained with the Bourquin procedure if 30 per cent of white corn as a source of vitamin B_1 is used in the diet. The author claims that this amount of white corn in the diet furnishes an abundance of B_1 and a neglible amount of B_2.

Distribution of Vitamin B_2 in Food Materials.—Employing the method of Chick and Roscoe,[26] Aykroyd and Roscoe[35] list the distribution of vitamin B_2 in foodstuffs in the following descending order: dried ox liver, dried yeast, autoclaved yeast, meat (dried steak), milk solids, dried egg yolk, wheat germ, wheat bran, wheat pollard, dried peas, whole wheat (Manitoba), whole wheat (English), whole maize (white), whole maize (yellow), maize germ meal, wheat endosperm and maize endosperm.

Hunt[36] found that wheat and corn contain approximately the same amounts of vitamin B_1 and B_2 but states that they are richer in B_1 than B_2.

Hunt and Krauss[37] reported that milk from cows under winter feeding conditions was potent in B_2 and relatively poor in B_1.

Recently Hetler, Meyer and Hussemann[38] published a detailed study of quantitative determinations of the content of B_1 and B_2 in cereals. They found that a diet including as much as 50 per cent of any of the cereals would supply enough vitamin B_2 for approximately normal growth, while 25 per cent of any of the cereals provided enough vitamin B_1. I[30] found rice polishings to be abundant in vitamin B_2 for growth. *This is confirmed by Hetler and her associates.*[38]

Vitamin B_2 and Anorexia.—Burack and Cowgill[40] recently reported that in the anorexia developed in dogs *on diets deficient in the vitamin B complex, either (1)* the antineuritic vitamin is the sole etiologic agent or (2) another substance, not vitamin B_2, is required to supplement the antineuritic factor in preventing and correcting the anorexia they investigated.

Graham and Griffith[41] emphasize the importance for normal appetite of both the antineuritic vitamin and another factor which is found in autoclaved liver. Whether this factor contained in autoclaved liver is vitamin B_2 still remains to be demonstrated.

Vitamin B_2 and Lactation.—In 1924 I demonstrated that the albino rat requires considerably more of the vitamin B complex for lactation than for growth. These results were followed by quantitative data in 1927. The observations in our laboratory have been confirmed by Macy and her co-workers[42] and by Evans and Burr.[43] The latter investigators, however, maintained that "lactation delinquency is due to inadequate antineuritic vitamin and in no degree to inadequate growth-promoting vitamin B.[43] Our results, on the other hand, demonstrated that both factors, B_1 and B_2, are essential in much greater amounts for lactation than for growth.[30] The apparent discrepancy probably lies in the failure of Evans and Burr with their biologic technic to find vitamin B_2 in "tikitiki,"[44] which is now reported by Hetler, Meyer and Husselman[38] to contain appreciable amounts of the antipellagric factor. The claims, however, of Hetler and her associates that more of B_2 than of B_1 is essential for lactation are not convincing since their "tikitiki," which furnished the B_1 factor, according to their own statement supplied appreciable quantities of the B_2 vitamin. Further carefully controlled quantitative experiments are necessary to establish this point definitely.

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[34] Munsell, Hazel E.: J. Nutrition **4**: 203 (July) 1931.

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[36] Hunt, C. H.: J. Biol. Chem. **78**: 83 (June) 1928.

[37] Hunt, C. H., and Krauss, W. E.: J. Biol. Chem. **79**: 733 (Oct.) 1928.

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[41] Graham, Claire E., and Griffith, W. H.: Proc. Soc. Exper. Biol. & Med. **28**: 1086 (June) 1931.

[42] Macy, Icie G.; Outhouse, Julia; Graham, Alice; and Long, M. Louisa: J. Biol. Chem. **73**: 189 (May) 1927.

[43] Evans, H. M., and Burr, G. O.: J. Biol. Chem. **76**: 263 (Jan.) 1928.

[44] Tikitiki is an alcoholic extract from rice polishings used in the Philippines as a specific in the cure of infantile beriberi.

The Influence of Vitamin B_2 Deficiency on Pathologic Changes in Blood and Tissues.—Smith[45] and I recently reported that neither arrest of growth, loss of weight, nor accompanying dermatitis, as a result of vitamin B_2 deficiency, had any influence on apparent or true blood sugar or alkali reserve of the albino rat. There was a reduction, however, in the glycogen content of the liver in animals that had lost considerably in weight during periods of inanition. Although vitamin B_1 per se produces a marked reduction in liver glycogen,[46] it still remains to be demonstrated whether vitamin B_2 per se produces a similar physiologic effect.

That pellagra is an avitaminosis, produced by a deficiency of a dietary factor, associated with the vitamin B complex, is now generally recognized. Recently, however, Bliss[47] has advanced the theory that pellagra is an iron-deficiency disease and claims that the curative agent of the vitamin-containing foods employed by Goldberger and other investigators is not vitamin B_2 (G) but iron. Although it has not yet been conclusively established whether the pellagra-like disease in the rat is the analogue of human pellagra, it may be of interest to mention here that the secondary anemia that we have encountered in this avitaminosis in our laboratory[48] in rats in which dermatitis was produced has no connection with a mineral deficiency, since our diets had an abundance of ferric citrate and since in such anemia we found no response to the administration of the ash from yeast.

We did not find any significant changes in the total and differential leukocyte count in vitamin B_2 deficiency.[48]

In 1928, Salmon, Guerrant and Hays[49] confirmed the work of Goldberger and Lillie,[13] but in addition reported the presence of a gram-positive coccus from skin and arthritic lesions, parenchymatous organs and the walls of the intestine.

In 1929, Sherman and Sandels[50] described their experiences with vitamin B_2 deficiency in the albino rat. Their observations were similar to those reported by Goldberger and Lillie[13] and by Chick and Roscoe.[18]

In 1928, Findlay[51] described the following pathologic changes in vitamin B_2 deficiency: 1. Failure of growth occurs and, as terminal phenomena, loss of appetite and fall in body temperature. 2. Nervous symptoms are absent, but after from eight to ten weeks on the deficient diet there are lesions of the skin, buccal mucous membrane and tongue, which are very similar to those of pellagra in man. 3. Death occurs in from two to three weeks after the onset of the skin changes. 4. There is a papillomatous condition of the cardiac end of the stomach. 5. The histologic changes characteristic of inanition are present in rats as the result of a deficiency of vitamin B_2. 6. Hypertrophy of the suprarenals occurs in rats lacking either vitamin B_2 or vitamin B_1.

Findlay[51] also found dermatitis preceding alopecia, vesicles, swollen collagen fibers, atrophy of elastic tissue and congestion of the small blood vessels in the cutis, atrophy of the testicles, and certain lesions of the tongue and the stomach. We were unable in our laboratory to confirm the occurrence of these changes.

Thatcher, Walker and I[52] observed that the lesions in the skin of the albino rat suffering from vitamin B_2 deficiency were not absolutely comparable with human pellagra. Hyperkeratosis and parakeratosis with ulceration occurred, which might have eclipsed the early picture. Rarefaction of the superficial corium, as well as the fibrolytic stage, mitoses and the erythematous change described by Denton[53] as occurring in human pellagra, were not observed. Congestion of the intestine, found in our laboratory, is an observation that can be correlated with pellagra. However, chromogenic urine and incontinence of urine, observed in some of our animals, are not prominent in human pellagra according to the experience of Thatcher[54] with numerous pellagrins. Furthermore, in our experience with experimental rat pellagra, diarrhea was not a prominent symptom, as in many pellagrins. Constipation was also not present. Salivation did not occur, as is reported by Sherman and Sandels.[50] Stomatitis, one of the main symptoms reported by previous investigators, was not present in our rats. Loss of weight was common, and anorexia occurred in the terminal stages of the avitaminosis. These are frequent symptoms in human pellagra. The presence of ophthalmia (in some animals) and the lack of involvement of the nervous system could not be correlated with the human disease.

In summarizing this work, Thatcher, Walker and I stated: "In our opinion, neither we nor other investigators preceding us have actually produced a disease in the rat comparable with human pellagra. All that can be said is that pellagra-like symptoms have been experimentally produced."

Day, Langston and O'Brien[55] have recently reported that cataracts, usually preceded by inflammatory changes in the lids and cornea, occur with regularity in young albino rats receiving a diet deficient in vitamin B_2. They state that further progress of such changes was stopped by the addition of vitamin B_2 to the diet.

Complexity of Vitamin B_2.—Recently Roscoe[56] produced experimental evidence to the effect that vitamin B_2 is a complex composed of two dietary essentials. She found that when egg white is given as a source of vitamin B_2, the lack of a third factor, which she tentatively termed Y, necessary for the normal growth of the rat becomes apparent. "This factor is present in autoclaved yeast extracts and in watercress, lettuce, spinach, and cabbage, but the amounts present in lettuce and etiolated cabbage leaves are less than in the dark green leaves tested, and the amount present in the onion bulb is still smaller."[56]

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[51] Findlay, G. M.: J. Path. & Bact. **31:** 353 (April) 1928.

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[53] Denton, J.: Am. J. Trop. Med. **5:** 173 (March) 1925.

[54] Thatcher, H. S.: Pellagra, Arch. Path. **12:** 970 (Dec.) 1931. Thatcher, Sure and Walker (footnote 52).

[55] Day, P. L.; Langston, W. C., and O'Brien, C. S.: Am. J. Ophth. **14:** 1005 (Oct.) 1931.

[56] Roscoe, Margaret H.: Biochem. J. **24:** 1754, 1930.

Recently we[57] found in our laboratory that there is no relation between the failure in growth and the incidence of pellagra-like symptoms in the rat, the dermatitis being prevalent in some animals that make normal growth, and absent in others that are first stunted in growth for weeks and months, and finally collapse following great losses of body weight. We therefore suggested from this study that the so-called vitamin B_2 (G) is composed of two dietary essentials: one, the deficiency of which produces pellagra-like symptoms in the rat, and another, the deficiency of which produces a decline of growth.

It is difficult to make any comparisons of our observations with those of Roscoe because of the differences in the dietary regimen. Neither are we justified at present in making final conclusions concerning the complexity of vitamin B_2. The work is still in the early experimental stage and needs further evidence of a more quantitative character in order to establish the differentiation clearly. For this reason, it seems to me that a final decision as to nomenclature of the "so-called antipellagric factor" should still be held in abeyance. Indeed, the vitamin B complex seems to be a fountain of vitamins, as is evidenced by the recent works of Williams and Waterman,[58] Hunt,[59] Reader,[60] and Carter, Kinnersley and Peters.[61]

Council on Physical Therapy

The Council on Physical Therapy of the American Medical Association has authorized publication of the following reports.
H. A. Carter, Secretary.

ACCEPTANCE OF SUNLAMPS

A Preliminary Statement

During the last six years the Council on Physical Therapy has devoted much time and effort to the question of ultraviolet radiation therapy. It has been one of the most complex problems presented to the Council. Because of the restricted number of diseases for which weak ultraviolet radiation is indicated, it was impossible for the Council to evaluate properly ultraviolet radiation therapy until the mass of evidence, for and against, had been investigated. During this period, many unfounded claims for the therapeutic effectiveness of ultraviolet radiation from sunlamps have been recorded in advertisements designed for the attention of the profession and the public.

Investigation requiring extensive study has been made by the Council in collaboration with physicists, numerous specialists in the field, and other scientists acting as consultants for the Council. The result of the work has shown that ultraviolet radiation emitted by "sunlamps" (one class of ultraviolet plus luminous radiators) has a definite but limited therapeutic value. The Council was also confronted with the task of testing the submitted sunlamps emitting these radiations in various degrees of intensity. In an adopted article entitled "Ultraviolet Radiation Useful for Therapeutic Purposes—Specification of Minimum Intensity or Radiant Flux," by Dr. W. W. Coblentz, the Council has definitely specified the types of ultraviolet radiation generators that possess sufficient ultraviolet energy to be of therapeutic value. Furthermore, the Council has drafted two lists of requirements to govern the advertising of ultraviolet generators to the public and the profession.[1]

Sunlamps, so called, are not to be confused with therapeutic ultraviolet generators designed for service in hospitals, clinics and offices of physicians. The therapeutic lamps are comparatively more powerful emitters of ultraviolet energy, while the sunlamps for unsupervised home use are often of low intensity, to avoid injury from overdosage. The term "sunlamp," or a similar name, is understood by the Council on Physical Therapy to mean a lamp that at a specified distance emits ultraviolet radiation not differing essentially from that of the clearest weather, midday, midsummer, midlatitude, sea level, natural sunlight, in total intensity and in spectral range of wavelengths extending from 2,900 to and including 3,130 angstroms and that shall not emit an appreciable amount of ultraviolet of wavelengths less than 2,800 angstroms.

Furthermore, the so-called sunlamp, acceptable to the Council, shall have an erythemogenic efficiency of not less than 20 per cent (on the basis of 22 per cent for Washington noonday June sunlight) and the total ultraviolet in the spectral range of wavelengths 2,900 to and including 3,130 angstroms shall not be less than the erythemogenic equivalent of 20 microwatts per square centimeter of homogeneous radiation of the wavelength (2,967 angstroms) of maximum erythemogenic effectiveness which equivalent is $(20:0.20=)$ 100 microwatts per square centimeter at a thermally comfortable operating distance (say 2½ feet) from the subject irradiated, as specifically defined in the Specification of Minimum Intensity in The Journal, March 26, page 1082.

From time to time, acceptances or rejections of sunlamps for home use will be published in the columns of the Council on Physical Therapy in The Journal. In accepting sunlamps, the attention of the profession is called to the following:

A. The Council on Physical Therapy definitely withholds acceptance of the postulatory principle of dual-purpose lighting, because it is highly theoretical and the promulgators of this idea have not presented acceptable clinical evidence to the Council substantiating its therapeutic or prophylactic value.

B. The Council on Physical Therapy declines to accept sunlamps if the manufacturer fails to state in all advertising matter and descriptive literature the distance between the lamp and the recipient required to equal the intensity of middday, midsummer, midlatitude, sea level, natural sunlight. Thus, in the acceptances that follow, the reader will note that the manufacturer has stated the distance the recipient should be from the sunlamp to receive the alleged benefits.

C. The manufacturers of acceptable sunlamps for home use have agreed to discontinue the objectionable claims such as that exposure to ultraviolet rays increases or improves the tone of the tissues or of the body as a whole, stimulates metabolism, acts as a tonic, increases mental activity, maintains health, or tends to prevent colds, because these claims have not been conclusively substantiated by experimental evidence.

D. The Council declines to sanction claims recorded in descriptive literature and advertising matter in which implication is made that the production of an erythema is unnecessary as a test of intensity; that suberythemal doses are sufficient for therapeutic benefit. The Council believes that, while such statements may be made in good faith, they merely open the way to fraud by irresponsible venders of alleged sources of ultraviolet radiation. Until further evidence is presented to prove otherwise, the Council declares that the erythema test is the only means of determining whether appreciable ultraviolet is emitted by the source.

In order that there can be no misunderstanding on the part of any one relative to the stand of the Council on the acceptance of sunlamps, the dual-purpose lighting and the suberythemal dosage, the aforementioned stipulations are given to the profession that it may better understand the problems confronting the Council regarding ultraviolet radiation therapy. The Council will give careful consideration to clinical evidence scientifically gathered by controlled experiments. This evidence should prove that radiation from sunlamps designed for use without medical supervision has other therapeutic benefits aside from the recognized prophylactic and curative effect on rickets and the assistance in the development of sound bones and teeth.

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[57] Sure, Barnett; Smith, Margaret E., and Kik, M. C.: Science **73:** 242 (Feb. 27) 1931.

[58] Williams, R. R., and Waterman, R. E.: Proc. Soc. Exper. Biol. & Med. **25:** 1 (Oct.) 1927; J. Biol. Chem. **78:** 311 (July) 1928.

[59] Hunt, C. H.: J. Biol. Chem. **79:** 723 (Oct.) 1928; Hunt, C. H., and Wilder, Willard: Ibid. **90:** 279 (Jan.) 1931.

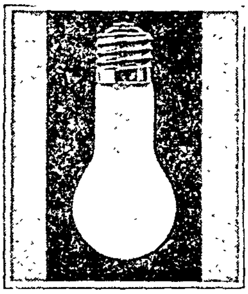
[60] Reader, Vera: Biochem. J. **24:** 77, 1827, 1930.

[61] Carter, C. W.; Kinnersley. H. W., and Peters, R. A.: Biochem. J. **24:** 1832, 1930.

[1] Regulations to Govern Advertising of Ultraviolet Generators to the Medical Profession Only and Regulations to Govern Advertising of Ultraviolet Generators to the Public Only.

G. E. MAZDA SUNLIGHT LAMPS, TYPES S-1 AND S-2, ACCEPTABLE

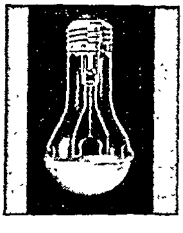
The Mazda Sunlight Lamps come in two sizes, S-1 and S-2. They are manufactured by the General Electric Company, Incandescent Lamp Department, Cleveland. The two lamps differ only in size and they may be described as a combination of a bulb containing two tungsten electrodes that are connected with a tungsten filament, while in the distal end of the bulb is a small pool of mercury. The current first flows only through the filament, but as the temperature increases the mercury vaporizes and an arc is formed between the ends of the tungsten electrodes. The process requires only a few seconds. However, it takes a few minutes for the lamp to begin radiating ultraviolet energy at its maximum efficiency. The mercury arc between the electrodes produces the major portion of the effective ultraviolet radiation. The result of the combination produces radiations in the visible, infra-red, as well as in the ultraviolet zones. The bulb is made of Pyrex glass, which absorbs most of the radiation in the ultraviolet region shorter than 2,800 angstrom units approximately. The Type S-2 lamp is much smaller than the Type S-1.



G. E. Mazda Sunlight Lamp Type S-1.

The Mazda Sunlight Lamps, Types S-1 and S-2, operate only on alternating current and in a specially constructed fixture. If direct current is the only supply available, additional equipment must be purchased at considerable expense. The manufacturer claims that these two lamps are designed to burn for an average period of 300 hours when employed in approved units or fixtures and that suitable adjustments will be made for any defect in manufacture.

The firm claims that "at a distance of thirty inches directly below the bulb of the Mazda Sunlight Lamp, Type S-1, or two feet directly under the Mazda Sunlight Lamp, Type S-2, the ultraviolet effectiveness is about equal to the midday, midsummer, midlatitude, sea level, natural sunlight. Increasing this distance decreases the effect quite rapidly; shortening the distance makes the ultraviolet more intense; when the distance is doubled it takes four times as long to get the same degree of sunburn. At half the distance, only one fourth of the time is required." The Council accepts the aforementioned statement on the basis of the most reliable evidence available. The distance between the lamp and the recipient is merely a close approximation and is subject to later modification when more exact data are available.



G. E. Mazda Sunlight Lamp Type S-2.

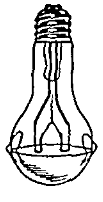
The company claims that clinical evidence, which it has submitted to the Council, proves that exposures of children to radiations emitted by the Mazda Sunlight Lamp, Type S-1, were effective in the protection of children against rickets. The Council agrees that if the treatment is given at the aforementioned distance between lamp and recipient the ultraviolet radiation emission is sufficient to be as effective in the prevention and cure of rickets as any other ultraviolet radiation emissions that are comparable to midsummer, midday, midlatitude, sea level, natural sunlight. With the distance between the lamp and recipient definitely indicated, the Council accepts this statement. The Council does not believe that sufficient evidence has been submitted to warrant acceptance of the statement that the Mazda Sunlight Lamps, Types S-1 and S-2, at ceiling distances or more from the recipient with its asserted suberythemal dose, furnishes sufficient ultraviolet radiation to prevent or cure rickets. The Council believes that further study and experimentation are necessary before proof of the value of suberythemal dosage of ultraviolet is sustained.

Based on the evidence that the radiations from the Mazda Sunlight Lamps at the prescribed distances may prevent rickets and promote the development of sound bones and teeth, the Council on Physical Therapy declares the G. E. Mazda Sunlight Lamps, Types S-1 and S-2, acceptable for inclusion in its list of accepted devices for one year.

WESTINGHOUSE MAZDA SUNLIGHT LAMPS, TYPES S-1 AND S-2, ACCEPTABLE

The Westinghouse Mazda Sunlight Lamps, Types S-1 and S-2, are manufactured and sold by the Westinghouse Lamp Company, 150 Broadway, New York City. The two lamps differ only in size, and they may be described as a bulb containing two tungsten electrodes that are connected with a tungsten filament, while in the distal end of the lamp is a small pool of mercury. The current first flows through the filament, but as the temperature increases the mercury vaporizes and an arc is formed between the ends of the tungsten electrodes. It requires only a few seconds for the arc to strike. However, it takes a few minutes for the lamp to begin radiating ultraviolet energy at its maximum efficiency. The mercury arc between the electrodes produces the major portion of the effective ultraviolet radiation. The result of the combination produces radiations in the visible, infra-red, as well as in the ultraviolet zones. The bulb is made of Pyrex glass, which absorbs most of the radiation in the ultraviolet region shorter than 2,800 angstrom units approximately. The Type S-2 lamp is about half the size of the Type S-1.

The Westinghouse Mazda Sunlight Lamps, Type S-1 and Type S-2, operate only on alternating current and in a special fixture. If the direct current is the only supply available, additional equipment must be purchased at considerable expense. The manufacturer claims that these two lamps are designed to burn for an average period of 300 hours when employed in approved units or fixtures and that suitable adjustments will be made for any defect in manufacture.



Westinghouse Mazda Sunlight Lamp Type S-2.

The firm claims that "at a distance of thirty inches directly below the bulb of the Westinghouse Mazda Sunlight Lamp, Type S-1, or two feet directly under the Westinghouse Mazda Sunlight Lamp, S-2, the ultraviolet effectiveness is about equal to the midday, midsummer, midlatitude, sea level, natural sunlight. Increasing this distance decreases the effect quite rapidly; shortening the distance makes the ultraviolet more intense; when the distance is doubled, it takes four times as long to get the same degree of sunburn. At half the distance, only one fourth of the time is required." The Council accepts the aforementioned statement on the basis of the most reliable evidence available. The distance between the lamp and the recipient is merely a close approximation and is subject to later modification when more exact data are available.

The company claims that clinical evidence, which it has submitted to the Council, proves that exposures of children to radiations emitted by the Westinghouse sunlight lamp, Type S-1, were effective in the protection of children against rickets. The Council agrees that if the treatment is given at the aforementioned distance between the lamp and the recipient, the ultraviolet radiation emission is sufficient to be as effective in the prevention and cure of rickets as any other ultraviolet radiation emissions that are comparable to midsummer, midday, midlatitude, sea level, natural sunlight. With the distance between the lamp and the recipient definitely indicated, the Council accepts this statement. The Council does not believe that sufficient evidence has been submitted to warrant acceptance of the statement that the Westinghouse sunlight lamps, Types S-1 and S-2, at ceiling distances or more from the recipient with its asserted suberythemal dose, furnishes sufficient ultraviolet radiation to prevent or cure rickets. The Council believes that further study and experimentation are necessary before proof of the value of suberythemal dosage of ultraviolet is sustained.

Based on the evidence that the radiations from the Westinghouse sunlight lamps at the prescribed distances may prevent rickets and promote the development of sound bones and teeth, the Council on Physical Therapy declares the Westinghouse Mazda Sunlight Lamps, Types S-1 and S-2, acceptable for inclusion in its list of accepted devices for one year.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

W. A. Puckner, Secretary.

SODIUM AMYTAL (See New and Nonofficial Remedies, 1932, p. 91).

The following dosage forms have been accepted:

Ampoule Sodium Amytal, 0.25 Gm. (3¾ grains): Each ampule contains the stated amount of sodium amytal and is accompanied by a 2.5 cc. size ampule of distilled water.

Ampoule Sodium Amytal, 0.5 Gm. (7½ grains): Each ampule contains the stated amount of sodium amytal and is accompanied by a 5 cc. size ampule of distilled water.

Ampoule Sodium Amytal, 1.0 Gm. (15½ grains): Each ampule contains the stated amount of sodium amytal and is accompanied by a 10 cc. size ampule of distilled water.

LUMINAL-SODIUM (See New and Nonofficial Remedies, 1932, p. 85).

The following dosage forms have been accepted:

Ampules Luminal-Sodium (Powder), 5 grains.
Capsules Luminal-Sodium, 5 grains.
Luminal-Sodium Tablets, ¼ grain.
Luminal-Sodium Tablets, ½ grain.

LIVER EXTRACT NO. 343 (See New and Nonofficial Remedies, 1932, p. 248).

The following dosage form has been been accepted:

Liver Extract No. 343, 110 Gm. bottle.

PRELIMINARY REPORTS OF THE COUNCIL

The Council has authorized publication of the following report.

W. A. Puckner, Secretary.

"NIRVANOL"

"Nirvanol" (Chemische Fabrik Von Heyden A.-G., Germany: Heyden Chemical Company, New York, distributor) is stated to be phenylethylhydantoin and is marketed in the form of tablets stated to contain 0.3 Gm. of phenylethylhydantoin and in the form of a solution in 4 cc. ampules containing 0.5 Gm. of the sodium salt of phenylethylhydantoin in 4 cc. of water. On request of the Council the American distributor obtained from the German manufacturer a statement of tests proposed for the identification of the product and transmitted it to the Council. The Heyden Chemical Company states that it is supplying the product to physicians and hospitals ordering it but is making no active propaganda for its sale.

The Council took up the consideration of "Nirvanol" at the request of the editor of The Journal, who asked that a preliminary report be prepared, to be published in the same issue of The Journal as the paper by T. Duckett Jones and John Lesh Jacobs (The Treatment of Obstinate Chorea with Nirvanol, this issue, p. 18). Nirvanol was introduced as an hypnotic but appears to have fallen into disuse for that purpose because of the rash that is commonly induced. The present report is concerned with its use in the treatment of chorea. It is almost trite to say that early clinical reports of a product are almost invariably more favorable than later reports, and the literature concerning Nirvanol seems to follow the rule. At any rate, Poynton and Schlesinger (*Lancet* **2**:267 [Aug. 10] 1929) write: "A new method of treating chorea with a preparation called nirvanol has recently had a fairly wide trial in Germany. In most clinics where the method has been used it has met with such constant success that it continues to be employed in severe and obstinate cases." In support of this statement they cite the favorable reports of Roeder (1919?), Rietschel, Hester, Husler, Matzdorff (1926), Huber, Schmal (1925) and Keller. They mention only two—Bendix, Buttner—who report that it has no advantage over any other form of treatment of chorea.

Schmal (*Deutsche med. Wchnschr.* **51**:1439 [Aug. 28] 1925) states that Frieda Roeder (1919?) was the first to report on the effect of Nirvanol in chorea. She administered Nirvanol in doses of from 0.3 to 0.45 Gm. during two days to each of two children. One had fever and rash on the ninth day and the other on the twelfth day. The chorea was relieved in one, and the other improved. Schmal treated three cases. The result was brilliant in one case, satisfactory in one, and one failed to improve. He states that the hypnotic action, which may extend even to stupor, is a great disadvantage, but he recommends it especially in severe cases of chorea.

De Rudder (*Klin. Wchnschr.* **5**:1522 [Aug. 13] 1926) states that the therapeutic effect of Nirvanol in chorea depends on the production of Nirvanol sickness—that is, exanthems, eventually fever, with puffiness of the face and mucous membrane, usually within twelve days, and showing a strong analogy to the incubation period of serum disease. He states that there is first an alkalosis, changing suddenly to acidosis, and to the latter he attributes the effects on the central nervous system resulting in temporary increase of choreic movements. He states that the quotient of Ca/inorganic phosphorus in serum sinks until the outbreak of the rash, so that it approaches the condition of a proanaphylactic tetany; that there is a high-grade eosinophilia at the time of the rash. He also mentions other analogies with serum disease and states that Nirvanol probably has the character of an antigen.

Matzdorff (*Deutsche med. Wchnschr.* **52**:528 [March 26] 1926) reports the treatment of two cases of chorea with Nirvanol. The first did very well indeed, but the second showed toxic symptoms, including stupor, without the appearance of rash, somewhat similar to that reported by Schmal. He believes the treatment is suited only for institutions. He states that the literature affords no conclusive evidence of any fatality due to Nirvanol, but that while it is effective it cannot be said to be harmless. Jones and Jacobs state that several deaths possibly, but not certainly, due to the drug have been reported. Matzdorff refers to one of these reports and dismisses the evidence, attributing the death to disease. Poynton and Schlesinger report favorable results with Nirvanol in the treatment of six cases. They state that it is effective, that there is an element of risk in its use, and that it may be considered unjustifiable to take such heroic measures to combat a self-limiting disease. They state, however, that it seems unwise to dismiss Nirvanol summarily on this plea alone. They state that the daily dose of 0.3 Gm. should not be exceeded and that if no rash appears by the fourteenth day, the method is useless and dangerous to proceed with, for which statement they quote Huber. East and Cullinan (*Lancet* **2**:190 [July 26] 1930) report that the rash occurred in only eight of their fifteen cases and that five did well without showing a rash. Twelve improved greatly; one improved moderately, and two showed no response. They state that one cannot foresee the reaction; that the symptoms if not dangerous are sometimes disturbing; that the attack is often cut short dramatically. They believe that the main justification for the use of Nirvanol would rest on a demonstration that abolition of chorea prevents cardiac disease, which remains to be proved; that we do not know that rheumatic infection is abolished, and that the results in two of their cases point to the opposite. They believe that Nirvanol should be used only in those cases which do not improve with ordinary treatment.

Pilcher and Gerstenberger (*Am. J. Dis. Child.* **40**:1239 [Dec.] 1930) report that the majority of children with chorea treated with Nirvanol reacted with fever and morbilliform rash; that following this reaction those with severe chorea usually improved promptly, but that the course of the disease in milder cases, and in those who did not react to the drug by fever or rash, was not appreciably altered, as a rule; (compare East and Cullinan); that the improvement usually occurred about the time the rash appeared, and that the temperature rose to as high as 105.4 F. There was pulmonary complication in one case, renal irritation and other symptoms in another. They call attention to Lengsfeld's report that patients treated with Nirvanol stayed in the hospital for a shorter time than others not treated with it; but Pilcher and Gerstenberger found no shorter stay in the hospital, though they admit that many factors determine this length of stay. They also state that Lengsfeld observed relapse of nine of twenty-three patients within two and a half years. Reichle (*Arch. Int. Med.* **49**:

219 [Feb.] 1932) compares the action of arsphenamine and cinchophen to Nirvanol sensitivity and says that the reaction to cinchophen is probably of the same type, the symptoms being strikingly allergic.

From this review of the literature, it would seem that the following conclusions are justified: (1) that a fairly large percentage of patients suffering with chorea are relieved by Nirvanol; (2) that there is no evidence that the relief of chorea by Nirvanol lessens the tendency to subsequent cardiac disease; (3) that there is no invariable relationship between the appearance of the various symptoms and the therapeutic effects. In other words, the therapeutic action is not the direct effect of any of the side actions, and that the therapeutic effects may occur in the absence of any one of these; (4) that a specific hypersensitiveness to Nirvanol has not been proved; (5) that the side actions are always disagreeable, sometimes alarming, and often positively dangerous, if not even fatal in a small proportion of cases; (6) that the treatment is too severe to justify its use except in those cases that do not yield readily to other treatment; (7) that Nirvanol should not be used in the treatment of chorea except in an institution where the patient is under close supervision.

The Council concluded that the treatment of chorea with "Nirvanol" is in the experimental stage, further investigation being necessary before a final statement of its value can be reached. Without, at this time, examining the claims regarding the identity of the product or considering the acceptability of the proprietary name, the Council voted to postpone action on "Nirvanol" to await the results of further investigation and authorized publication of this report.

REPORTS OF THE COUNCIL

The Council has authorized publication of the following report.

W. A. Puckner, Secretary.

TAR-ME-CINE NOT ACCEPTABLE FOR N. N. R.

Under the uninforming name "Tar-Me-Cine" the Tar-Me-Cine Laboratories, Inc., Waltham, Mass., market a preparation stated to have the following composition: "Chloral Hydrate 8 Drams. Resorcin 8 Drams. Tartaric Acid 10 Drams. 40 Grains. Phenol 10 Drams. 40 Minims. Glycerine 10 Drams. 40 Minims. Menthol 2 Drams. 55.4 Grains. Camphor 2 Drams. 55.4 Grains. Boric Acid 26 Drams. 40 Grains. Alcohol 282 Drams. 40 Minims. A suitable emollient vehicle.—Ad. Q.S. 128 Ounces." This "formula" is incomplete in that the identity of the ingredients which compose the "suitable emollient vehicle" (which may be the really important part of the mixture) is not declared. Furthermore, no statement of composition appears on the label of the preparation other than a declaration of the amount of alcohol and chloral hydrate, as required under the Food and Drugs Act.

According to the label, "Tar-Me-Cine" is "Used in the external treatment of chronic eczema and other skin diseases" and "has been successfully used in the treatment of Infantile Eczema, Poison Ivy, Salt Rheum, Acne and other kindred skin diseases."

As evidence for the usefulness of this complex mixture the Tar-Me-Cine Laboratories, Inc., sent a list of physicians "who have used Tar-Me-Cine, and found it to possess Therapeutic qualities, for the particular affliction for which they used it." Evidence was not presented, however, to indicate that this complex mixture of drugs is therapeutically superior to simpler preparations which physicians may prescribe and to which physicians should give preference in the interest of rational drug therapy.

"Tar-Me-Cine" is unacceptable for New and Nonofficial Remedies because the identity of the "suitable emollient vehicle" is not declared and because the identity and amounts of the potent ingredients are not declared on the label; because the recommendations on the label for use in specific diseases may lead to the ill advised use of the preparation by the laity; because no acceptable evidence is offered for the asserted efficacy of the mixture; because the name of the preparation is not descriptive of its composition, and because it is a complex and unscientific mixture.

Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

WHITE PEARL EGG NOODLE (FINE) AMERICA'S STANDARD

WHITE PEARL EGG NOODLE (WIDE) AMERICA'S STANDARD

Manufacturer.—Tharinger Macaroni Company, Milwaukee.

Description.—Egg noodles prepared from a mixture of durum patent flour, durum semolina and egg yolk; packed in wax-paper in cartons.

Manufacture.—The flour, semolina and egg yolk in definite proportions and with sufficient water are thoroughly mixed in a dough mixer, kneaded in a kneading machine, and then rolled and cut into noodle strips, which are dried in air currents to approximately 10 per cent moisture content and packed in wax-paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	9.7
Ash	1.5
Salt (NaCl)	0.3
Lipoids	5.7
Protein (N × 6.25)	14.7
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	68.2
Lipoid phosphoric acid (P_2O_5)	0.130
Lipoid phosphoric acid (P_2O_5) (dry basis)	0.144
Artificial color	absent

Calories.—3.8 per gram; 108 per ounce.

Claims of Manufacturer.—These noodles are for all table uses for this type of product.

HEINER'S HUGE SLICED BREAD HEINER'S TWIN LOAF BREAD

Manufacturer.—Heiner's Bakery, Huntington, W. Va.

Description.—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932, page 817); prepared from patent flour, water, yeast, a yeast food containing ammonium chloride, calcium sulphate, sodium chloride and potassium persulphate, salt, lard, sucrose and dry skim milk.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.9
Ash	0.8
Fat (ether extraction method)	0.9
Protein (N × 6.25)	9.3
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	52.8

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

INTERNATIONAL FREE RUNNING SALT

Manufacturer.—International Salt Company, New York.

Description.—A table salt containing 1 per cent added calcium carbonate, which tends to preserve its "free running" quality.

Manufacture.—The salt is obtained by evaporation of salt brine made from rock salt deposits in the earth. Surface water is forced down into the rock salt deposits through deep wells. The brine so formed is pumped to the surface, treated with calcium hydroxide for purification, and stored in tanks to permit insoluble matter to settle out. The resultant clear brine, free from all precipitated matter, is conveyed to the evaporators. Two methods of evaporation are used: the "grainer," or open pan type, and the "vacuum," or closed pan type.

By the open pan evaporator method the brine is evaporated in long shallow tanks equipped with steam coils. As the water is evaporated, salt crystals form, settle to the bottom and are removed at regular intervals by mechanical raking devices. The size of the crystals depends on the speed of evaporation of the salt brine. The salt crystals are washed, freed from the brine by filtration, and kiln dried by passing through rotating heated dryers. The dried salt is screened to separate it into various sized grains. Salt of a definite and uniform granulation is admixed with 1 per cent calcium carbonate and automatically packed in paper cartons.

In the "vacuum" method, the brine is heated and evaporated under reduced pressure in closed vessels. The salt grains in the "vacuum" pans are perfect cubes: those in the open pans are flatter and are called "snowflake" salt.

Analysis (submitted by manufacturer).—

	per cent
Water insoluble material	0.00
Iron oxide (Fe_2O_3)	absent
Barium salts	absent
Calcium chloride ($CaCl_2$)	absent
Calcium sulphate ($CaSo_4$)	0.44
Magnesium chloride ($MgCl_2$)	0.06
Sodium chloride ($NaCl$)	98.50
Calcium carbonate (added) ($CaCO_3$)	1.00

Claims of Manufacturer.—International Free Running Salt is for all table uses of salt. The added calcium carbonate tends to preserve the "free running" qualities.

ASCO EVAPORATED MILK FARMDALE BRAND EVAPORATED MILK

Manufacturer.—American Stores Dairy Company, Dundee, Ill.

Description.—An unsweetened, sterilized evaporated milk.

Manufacture.—Only strictly sweet fresh milk of healthy herds and from sanitary farms regularly inspected by the company is used. On arrival at the plant, the milk is tested for flavor and acidity; milk of more than 0.18 per cent lactic acid is rejected. The milk is brought to a temperature of from 95 to 100 C., is concentrated in "vacuum pans" at 55 C. to a definite specific gravity, and homogenized by being forced through small apertures, which disperses the fat in fine globules which later will not separate out. The homogenized milk is standardized under laboratory supervision to conform to the United States Department of Agriculture standard for evaporated milk and automatically filled into cans through small openings which are automatically sealed. The sealed filled cans are brought to 100 C. and processed in a pressure cooker at 115 C. for fifteen minutes, after which they are quickly cooled.

The factory is maintained in a strictly sanitary condition. The equipment is cleaned daily with brushes and washing solution.

Analysis.—

	per cent
Moisture	73.8
Total solids	26.2
Ash	1.5
Fat	7.8
Protein (N × 6.38)	6.9
Lactose (by difference)	10.0

Calories.—1.4 per gram; 40 per ounce.

Micro-Organisms.—The product is sterile.

Claims of Manufacturer.—These brands of evaporated milk are for general baking, cooking and table purposes and for infant feeding. The mixture of equal parts of the evaporated milk and water is not below the legal standard for whole milk. The curds formed in the stomach are smaller, softer and more readily digestible than those from raw or pasteurized milk.

YACHT CLUB BRAND CORN SYRUP WITH CANE FLAVOR

(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—Bemis, Hooper, Hays Company, Oshkosh, Wis.

Description.—A table syrup; a corn syrup base (85 per cent) with refiners' syrup (15 per cent).

Manufacture, Analysis, Calories and Claims of Manufacturer.—See these sections for Banner Blue Golden Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

TRIPLE AAA BRAND PURE TOMATO JUICE

Manufacturer.—American Packing Corporation, Evansville, Ind. A wholly owned subsidiary of the Loudon Packing Company of Terre Haute, Ind.

Description.—Canned tomato juice; retains in large measure the vitamin content of the raw juice used. Contains a small amount of added salt.

Manufacture, Analysis, Calories, Vitamins and Comments.—See these sections for Loudon Brand Tomato Juice (THE JOURNAL, June 25, 1932, p. 2289).

KRE-MEL DESSERT (COFFEE FLAVOR)

A Mixture of Sugar (Dextrose and Sucrose), Corn Starch, Pure Coffee, Vanillin

Manufacturer.—Corn Products Refining Company, New York.

Description.—Mixture of dextrose, corn starch, sucrose; flavored with vanillin and coffee.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	1.2
Fat (ether extract)	1.1
Protein (N × 6.25)	1.1
*Dextrose	45.0
*Sucrose	20.0
*Starch	24.5
Caffeine less than	0.1
Crude fiber	0.0
Titratable acidity as HCl	0.03
Vanillin flavor	present

* Estimated from formula.

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—A dessert powder for the simple preparation of table desserts.

PORTOLA FILET OF SARDINES

(In Pure Olive Oil)

Manufacturer.—K. Hovden Company, Monterey, Calif.

Description.—Cooked, boneless, smoked Pilchard sardines (Clupea caeruleus, blue sardines) packed in olive oil in tins.

Manufacture.—Pilchard sardines harvested as described for the Portola Sardines (Pilchards) (THE JOURNAL, June 4, 1932, p. 1991) are used. As soon as the fish enter the plant, slices are cut off the body so as to eliminate the ribs and backbone. The meat slices are placed in wire baskets, submerged in a weak brine for fifteen minutes to extract the blood, dried, and smoked on wire trays from four to six hours. They are packed in cans and are steamed for four minutes standing upright and for ten minutes turned over to permit the draining off of excess water and oil. Olive oil is added and the cans are sealed and processed under the control of the California State Board of Health as to temperature and time.

Analysis, Calories and Claims of Manufacturer.—See these sections for Portola Sardines (Pilchards).

HELMS OLYMPIC WHEAT BREAD SLICED

(White and Whole Wheat Flours)

Manufacturer.—Helms Bakeries, Ltd., Los Angeles.

Description.—A bread prepared from white and whole wheat flours by the straight dough method (method described in THE JOURNAL, March 18, 1932, page 889); prepared from a mixture of white and whole wheat flours, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, sweetened condensed skim milk, salt, lard, sucrose, invert sugar and water.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.0
Ash	2.0
Fat (Polenske-Grujic method, Leach, "Food Inspection and Analysis," ed. 4, p. 343)	2.6
Protein (N × 6.25)	11.2
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	49.4

Calories.—2.7 per gram; 77 per ounce.

Claims of Manufacturer.—A good quality bread prepared from white and whole wheat flours.

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SATURDAY, JULY 2, 1932

DIET AND HUMAN MILK NUTRIENTS

Recent studies in the growth and development of the child have emphasized anew the importance of having fuller knowledge of the physiologic rôle of the mother during the days of dependence of her baby. Indeed, few scientific problems in relation to maternal nutrition are of greater significance than those relating to the diet of the mother during the reproductive cycle and its subsequent effect on both mother and child. The knowledge that proper prenatal care and adequate maternal diet are effective factors in the postnatal development of the child shows the necessity of close cooperation between the obstetrician and the pediatrician.

The Journal[1] has emphasized that the human mother is subject to the influence of her own diet, which may be reflected to some extent in the composition of her milk. Shukers, Macy, Donelson, Nims and Hunscher[2] point out that it is acknowledged generally that the proper kind and amount of food are essential to the mother during pregnancy and lactation if she is to maintain good health and at the same time nourish her baby properly before and after birth. Medical literature is, nevertheless, practically barren of any extended studies on the effect of diet on human reproduction, and the feeding of women during this crucial period still remains largely empirical. In another report[3] these authors have reemphasized the fact that experimental work to demonstrate the precursors of milk constituents and factors determining the metabolic requirements for lactation has been done chiefly on mammals other than man and especially on the cow and the goat. Though the results with these animals are significant in indicating the general relationships, they cannot be expected to show the specific demands of woman. There is a possibility that the digestive processes of the ruminant and of man, as well as the synthetic capacity, may differ.

Extensive and timely studies on maternal nutrition are being carried forward on women in the Research Laboratory of the Children's Fund of Michigan, in Detroit, under the direction of Dr. Icie G. Macy. It has been observed that lactation increases the food demands approximately 60 per cent over and above those of pregnancy. The self chosen diets and the nutritive requirements of three women during sixty weeks of intensive lactation have been observed with especial reference to the intake of calories, proteins, fat, carbohydrate, calcium and phosphorus in the food and the outgo of these substances in the milk secreted. These women produced daily an average of 1,419, 2,366 and 3,134 cc. of milk. Since current regimens recommended for lactating women are empirical, it seems pertinent to consider the quantity of nutrients actually utilized in the secretion of such quantities of milk. When the necessary ingredients for milk synthesis are lacking in the daily food, the mother may decrease her milk output, secrete milk deficient in these constituents, or draw them from her own tissues. A marked deficiency of dietary proteins, fat or carbohydrate is usually associated with a prompt drop in milk volume; inadequate vitamin may result in a vitamin-deficient milk; while an insufficient mineral intake results in a drain on the maternal reserves. The Children's Fund investigators further state that intensive lactation is often marked by negative calcium and phosphorus balances but that there is obviously a limit to the amount of material a woman can lose from her tissues without some impairment of her body and a diminution in the nutritive value of her milk.

Macy and her co-workers point out that, under ordinary conditions, milk volume is the chief determinant of the total output of milk calories; therefore milk volume becomes a factor of moment in planning diets for lactating women. The food fuel of breast milk is derived from the cleavage products of the fats, carbohydrates and proteins of either ingested food or maternal tissue. The Detroit investigators show that women who ingested daily dietaries whose percentage distribution of calories between proteins, fats and carbohydrates was in the ratio of 15:37:48 and with caloric values of 4,300, 4,600 and 3,800 secreted milk containing 2,100, 1,500 and 1,120 calories, respectively; thus there were left approximately 2,000, 3,000 and 2,600 calories daily for maintenance, provided the human mother is 90 per cent efficient in the transformation of food energy into milk energy. These observations are in accord with the advice given by Rose,[4] who suggests that in planning a dietary for the lactating woman an allowance equal to 10 per cent of the caloric output in milk should be made for the dissipation of energy in the physiologic processes of milk secretion. They are not, however in agreement with those who follow the dictum of practices indicated in the dairy industry, and advise an extremely generous supply of two food calories for each breast milk calory beyond maintenance requirements. Calory overfeeding has not been demonstrated to be advantageous either to the cow or to woman and differences in species such as exist between the ruminant cow and woman have to be considered in the physiologic utilization of food calories in the secretion of milk and in the appraisal of lactation requirements.

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[1] Diet and the Production of Human Milk, editorial, J. A. M. A. 98:739 (Feb. 27) 1932.

[2] Shukers, Carroll F.; Macy, Icie G.; Donelson, Eva; Nims, Betty, and Hunscher, Helen A.: Food Intake in Pregnancy, Lactation, and Reproductive Rest in the Human Mother, J. Nutrition 4:399 (Sept.) 1931.

[3] Shukers, Carroll F.; Macy, Icie G.; Donelson, Eva; Nims, Betty, and Hunscher, Helen A.: A Quantitative Study of the Maternal Dietary with Respect to the Nutrients Secreted into Breast Milk, J. Nutrition 5:127 (March) 1932.

[4] Rose, Mary S.: Feeding the Family, ed. 3, New York, Macmillan Company, 1929.

Hoobler[5] has demonstrated that the provision of an adequate protein intake during lactation is important since it has been shown that milk protein is ultimately derived from food protein and that the level of dietary protein affects the quantity of milk secreted and, within limits, its composition. The milk proteins are derived from the free amino-acids of the blood. Macy and her associates point out that the quantity and quality of the amino-acids in the circulating blood are changed by diet, by the varying nitrogen demand of the tissues, and by the supply of nonprotein calories. These changes have a marked influence on milk secretion. In the words of the authors, "because of the multiplicity of determinate influences it becomes difficult to set a physiological minimum for any body function and, indeed, it is impossible to state a quantitative protein requirement for complicated physiological functions such as those involved in lactation superimposed on maintenance."

One cannot review these studies on maternal nutrition without being impressed with the urgent need for more comprehensive observations on women and a closer scrutiny of the present empirical dietary standards for human reproduction. The importance of the problem justifies a more thorough study of the nutritional needs of women.

THE MEASUREMENT OF PHYSICAL GROWTH

One naturally thinks of the observation and measurements of a large number of persons at different ages and under different conditions as a simple way of securing useful information regarding growth. The investigator in this field is at once confronted with a practical difficulty in deciding how the crucial measurements shall be made. The procedure that promptly suggests itself, of securing data on the body weight, is far from a satisfactory way of estimating changes in size or development. There are changes in stature, muscular development, body proportions and so on that may be quite as significant as gains in weight; indeed, they may occur independent of the body weight. If there is such a condition as a "normal build" of the body, it may betray itself only by measurements that are not necessarily related to the weight. Consequently, attempts have been made to introduce other estimates into the study of growth. Height and girth have been measured. "Sitting height" was used by Pirquet to establish his "index of nutrition," or body build.

Zook[1] has pointed out that physical growth presents two aspects, the external and the internal. The external aspect is recognized as an increase in size or volume. The internal aspect consists in the many vital changes taking place within the body, such as the increase in the size of the heart and arteries and the percentage of muscle and bone. He argues that, since the human body and its segments are three dimensional, methods of measurement must be adopted which express the relations of these segments in units of volume. Accordingly, Zook has devised a method, at the University of Chicago, based on the time-honored principle of Archimedes: "The volume of water displaced by a body submerged is equal to the volume of the body," which is self evident. The ingenious apparatus of Zook records the volume not only of the body as a whole but also of its segments. Detailed measurements were thereby made on a large number of boys from 5 to 19 years of age, so that norms for each age group were secured. By measuring a well nourished group from the Laboratory Schools and a poorly nourished group from the University Settlement, it was possible to point out detailed differences in the groups. The cranium and the foot are the only segments that are practically equal in volume in the settlement and university groups. These segments are a larger percentage of the total body in the settlement group than in the university group. The settlement group is much lower than the university group in volume of all other segments, the greatest difference being found in the trunk. In these segments the two groups are about equal when the volume of these segments has been reduced to the percentage of the total volume. The use of his new method has enabled Zook to show the growth lag in late childhood and the adolescent spurt that follows for the body as a whole and for all the segments with the exception of the cranium and the foot. Of the three major segments, the leg is first to reach the low level and start the adolescent spurt at about 10 years of age, increasing to 12 and remaining high until after 16. The head segment begins its increase at about 11 years of age, increasing to 13 and dropping rapidly thereafter. The trunk begins its increase at about 12 and continues to increase until about 16; then it drops rapidly.

The significance of this new mode of examination is evaluated by its author as follows: It opens up an entirely new field by presenting a new method of studying physical growth. It makes possible the location of lags and spurts in growth for each of the segments in an individual or for a whole group. The chief value of the method will probably come when measurements have been made on the same subjects throughout their periods of growth. Although the method is of unquestionable value as a research device in physical growth, Zook believes it to be of great usefulness in school health work and other fields of education, such as swimming instruction. The measurement can be completed in about eight minutes. A comparison of the graphs made on the same subject at different times will show where and how extensive have been the changes in volume between the time of the two measurements. The study is significant also, Zook adds, in that it has shown the invalidity of formulas for body volume. Since the present method gives body volume accurately, any further need of such formulas is entirely eliminated. The specific gravity of the whole body should be significant to swimming instructors in locating natural difficulties in learning to swim. It may also have contributions to make in locating the onset of puberty or other physical changes.

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[5] Hoobler, B. R.: The Effect on Human Milk Production of Diets Containing Various Forms and Quantities of Protein, Am. J. Dis. Child. **14**: 105 (Aug.) 1917.

[1] Zook, D. E.: The Physical Growth of Boys, Am. J. Dis. Child. **43**: 1347 (May) 1932.

It is not generally known that during the World War Bean,[2] working with the American Red Cross to provide more balanced artificial limbs for disabled soldiers, used water displacement to obtain the volume of the artificial limb by submerging the corresponding whole limb in water and measuring the water displaced. The specific gravity was determined, approximately, by finding the specific gravity of the limb that had been amputated. Thus having the desired volume and the specific gravity, an artificial limb could be made the same size and weight as the corresponding whole limb, restoring the symmetry and balance of the whole body as they were before the loss of the limb.

TILTON FOUND GUILTY

On June 16, Lester Tilton, notorious and aggressive promoter of a nostrum for cancer, was found guilty of conspiracy to violate the medical practice act of the state of Illinois. Similar verdicts were also brought by the jury against two co-defendants who aided Tilton in his quackery—Harry de Joannis, a promoter, and Joseph Duffy, a licensed physician. Tilton and de Joannis face a penitentiary term of from one to five years and the payment of a fine of $2,000. The jury recommended that some leniency be shown Duffy because of his comparative youth—a term of one day to one year in the county jail.

Tilton's activities have long been a stench and a disgrace to the Middle West. Originally from Clinton, Iowa, Tilton came, a year or two ago, to Chicago, doubtless deciding that Illinois offered a lush field. With the personnel that composed the Department of Registration and Education of the State of Illinois some years ago, Tilton's judgment might have been good. Fortunately for the public health, there was a change in this personnel; more recently, aggressive action has been taken by that department against those who are violating the medical practice act of the state of Illinois.

Tilton's "cancer cure," like practically every other humbug of the type, is an escharotic with a zinc salt as the active ingredient in a base of peat as the "mystery" element. Tilton's fake was dealt with by the Bureau of Investigation in an article that appeared in The Journal, June 7, 1930, and his methods and activities were described in detail at that time. Tilton has always worked the religious angle and has been particularly successful in interesting well meaning but technically untrained members of the Roman Catholic Church in supporting his schemes. At the time of The Journal's previous article, it was brought out that Tilton had worked through the nuns of an order in Wisconsin. More recently Tilton, with the aid of promoter de Joannis, was able to interest the nuns of the Felician Order in Chicago. The newspaper reports of the trial just completed brought out that they took in at the so-called clinic operated at the Felician convent, in the thirteen months of its operation, about $19,000, of which about $6,000 was paid to Tilton. Tilton testified that he had placed the "formulas" for his nostrum in escrow with a trust company to be turned over to the Felician nuns on his death. It was further disclosed in the course of the trial that Tilton and de Joannis had launched a scheme to incorporate the treatment for a million dollars, but this fell through following an investigation of the nostrum.

So rank did the scandal of the operation of this fake cancer cure in a nunnery become that Cardinal Mundelein requested his personal physician, Dr. Louis D. Moorhead, head of the medical committee of the Catholic archdiocese of Chicago and dean of the department of surgery at Loyola, to head a committee of physicians to investigate the convent clinic. Following this investigation, the cardinal ordered the clinic closed.

The testimony during the trial bore a striking resemblance to the testimony given at the Baker "cancer cure" libel suit of some weeks ago. In fact, the story of all such "cancer cure" fakes has a ghastly sameness. People with superficial benign growths or blemishes, which they believe to be cancer, go to these fakers; the blemishes are diagnosed cancer and are eaten out with escharotics; the victims suffer excruciatingly while it is being done but finally go home disfigured but, of course, healthy—for they had never been anything else. The poor sufferers from what is really cancer, many of whom have impoverished themselves or their loved ones to take the fake treatment, end up in the graveyard.

Owing to the complexities of American jurisprudence, which on occasion seems peculiarly to favor the manipulations of the criminal and to penalize the public, it is by no means certain as yet that Tilton will serve the sentence that has been pronounced. Nevertheless the state of Illinois is to be congratulated on the valiant fight it has made to protect its citizens against this heartless form of quackery. Particular credit belongs to Assistant State's Attorney Charles A. Bellows and to Judd E. Edwards, chief inspector of the Department of Registration and Education of the State of Illinois, for the work they have done in this case against unbelievable difficulties and malignant influences. Drs. Max Cutler, Francis Carter Wood, James P. Simonds, and other physicians deserve appreciation for giving of their time and effort to aid the state in this work.

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[2] This information was derived from the review by Zook.

Current Comment

RECIPROCAL IMMUNOLOGIC RELATIONSHIPS

The apparently spontaneous appearance of antipneumococcus immunity in growing rats is the latest form of Friedberger's "maturation panimmunity" to be challenged by American investigators. Dr. Victor Ross[1] of the department of health of New York City found that mice and young rats are nearly equal in susceptibility to experimental inoculation with pneumococci but that adult rats, grown with no known contact with these micro-organisms, may in extreme cases resist a million times the youthful minimum lethal dose for this animal species. This apparently normal adult immunity to pneumococcus, however, is not the same for all types of this infection. It appears earliest and is most effective against type II pneumococcus, is less prompt in its appearance and much less effective against type III, and is not demonstrable with type I. Dr. Ross interprets his observation as evidence of the presence in the normal intestinal tract of rats of saprophytic micro-organisms antigenically related to the type II and type III pneumococcus. In support of this hypothesis he quotes Sugg and Neill's[2] demonstration of the reciprocal immunologic relationship between type II pneumococcus and certain yeasts (Saccharomyces cerevisiae), and Avery, Heidelberger and Goebel's[3] demonstration of a potentially antigenic polysaccharide common to type II pneumococcus and the Friedländer bacillus. While at present Dr. Ross's theory of reciprocal environmental immunization must be regarded as little more than a plausible explanation of his results, his theory is nevertheless in line with the current tendency to seek other than specific infectious factors to account for adult immunity to poliomyelitis, scarlet fever, diphtheria, tuberculosis and certain other specific infections. Zozaya's[4] description of a common antigenic factor in meningococcus and certain putrefactive bacteria, and the subantigenic lipoids[5] now known to be common to certain pathogenic bacteria and certain animal tissues which may serve as food, are other examples of the newer knowledge of such conceivably important heterophile relationships.

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1. Ross, Victor: J. Exper. Med. **54:** 875 (Dec.) 1931.
2. Sugg, J. Y., and Neill. J. M.: J. Exper. Med. **49:** 183 (Feb.) 1929. Sugg, J. Y.; Richardson, L. V., and Neill, J. M.: Ibid. **50:** 579 (Nov.) 1929.
3. Avery, O. T.; Heidelberger, M., and Goebel, W. F.: J. Exper. Med. **42:** 709 (Nov.) 1925.
4. Zozaya, J.: J. Exper. Med. **54:** 725 (Nov.) 1931.
5. Organ-Specific Lipoids, editorial, J. A. M. A. **97:** 1628 (Nov. 28) 1931.

N. A. COBB, NEMATOLOGY AND MEDICINE

Probably few persons, well informed in the subject, will deny that Dr. N. A. Cobb of the U. S. Department of Agriculture, whose death has just occurred, was the leading specialist of this country and perhaps of the world in the zoological group known somewhat incorrectly as the "free-living nematodes." It has been estimated that by their infestation of live stock the nematodes cause a loss of one hundred million dollars annually. In his address before the American Society of Parasitologists in January, 1931, and in subsequent papers, Cobb castigated his zoological colleagues for their lack of interest in the nemas and he flayed the authors of textbooks for not keeping up to the times in laying before their audiences the enticing anatomic and biologic details of his specialty. The question arises whether a correspondingly brilliant specialist in mammalogy, ornithology, ichthyology or many other zoological "ologies" could not present equally valid arguments for his field. College and high school zoology resemble the changing "fashions." Zoological trends are established by the professors of certain universities which by more or less general consent are accepted as centers for training teachers, and the zoological tendencies of these professors radiate through their graduates to the colleges and high schools. Had Cobb, with his inspiring enthusiasm, been head professor of zoology at any one of, say, ten leading universities, nematology would become more fashionable than it is today in college and high school courses. Unfortunately, the field is so large that the teacher of beginners can select only a small portion of the vast field of zoology to pass on to his pupils. The "survey" courses in general biology and general zoology can touch only a few of the high spots of the subject. Much the same situations exist in medicine. It is not unnatural that the average instructor follows the path of least resistance and is influenced more by what he has been taught than by what is published in the recent special journals. Cobb's argument in reference to nemas versus echinoderms seems, from the medical sidelines, well founded. His address was in reality another protest against the intellectual miser who seeks knowledge for the sake of knowledge instead of for the good it will do.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The program for the week is as follows:

July 4. Holiday; no broadcast.
July 6. Keeping the Baby Well.

There is also a fifteen minute health talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM, Chicago.

The program for the week is as follows:

July 9. What Is Acidosis?

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Portrait of Dr. Robertson.—The Barbour County Medical Society was presented with a portrait of the late Dr. James W. Robertson, Clayton, June 7. Dr. Robertson was president of the society from 1926 to 1928. Dr. George O. Wallace, Bakerhill, presented the portrait, and Dr. James Reid, Clayton, president of the society, presided. The speaker was Dr. Thurston A. Warren, Clayton.

Society News.—At the meeting of the Northeastern Division of the Alabama State Medical Association, June 3, at Scottsboro, the speakers included Drs. Amos C. Gipson, Gadsden, on "Cultivating the Child's Appetite"; Edwin V. Caldwell, Huntsville, "Diagnosis and Treatment of Fractures of the Pelvis"; German P. Haymore, Chattanooga, Tenn., "Subacute Bacterial Endocarditis"; Seale Harris, Birmingham, "Epilepsy, Associated with Hyperinsulinism: Its Control by Diet," and Marion R. Moorman, Huntsville, "Otomycosis." Dr. Hugh Boyd, Scottsboro, president of the Jackson County Medical Society, presented a case report on Rocky Mountain spotted fever.

CALIFORNIA

Immunization Programs.—Nine physicians of Placer County, cooperating with the county health officer and the state department of health, recently provided immunization against diphtheria to 1,237 children in one week. In Madera County, 2,000 children have been vaccinated against smallpox since March 23. Madera County is sparsely settled and the schools are widely separated.

State Medical Meeting.—Dr. Joseph M. King, Los Angeles, was installed as president of the California Medical Association at its recent annual meeting in Pasadena. Dr. George G. Reinle, Oakland, was made president-elect, and Dr. Emma W. Pope, San Francisco, reelected secretary. Del Monte was chosen as the place for the next annual session, April 24-27, 1933, with headquarters at the Del Monte Hotel. Speakers at the recent meeting included Drs. Samuel A. Levine, Boston, on "Clinical Aspects of Coronary Disease"; Fred H. Albee, New York, "Treatment of Fracture of the Hip"; George K. Rhodes, San Francisco, and Donald C. Collins, Rochester, Minn., "Perforated Peptic Ulcer"; Karl A. Menninger, Kansas City, "Psychoanalytic Aspects of Suicide"; Harvey T. Olsan, Los Angeles, "Syphilitic Pneumonia"; Albert L. Chaney, Ph.D., Los Angeles, "Purity of Nitrous Oxide—with Especial Reference to Nitrogen Content"; John F. Kessel, Ph.D., Los Angeles, "Bacillary Dysentery—Laboratory Observations and Bacteriophage Therapy"; Karl F. Meyer, Ph.D., San Francisco, "Principles of Prophylaxis Against Typhoid Fever, Whooping Cough, Scarlet Fever and Smallpox," and Daniel Beecher, deputy district attorney, Los Angeles, "The Physician as an Expert Witness—His Qualifications, Duties and Limitations, with Suggestions for Relief of Present Status of Expert Witnesses." A special exhibition included sixty-one books and manuscripts relating to medical knowledge in Tudor England.

COLORADO

Survey of Housing Conditions.—With a reduction in infant and maternal mortality as one of its objectives, a survey of housing conditions in the so-called slum districts of Denver was made in August, 1931. When the compilation of data was complete, the building inspectors were requested to pass on buildings that were not considered habitable. Condemnation proceedings then were instituted. Fifty-seven houses, eleven stores and five garages were among the buildings demolished. The wrecking was done by the city at no expense to the owner. In many cases it was necessary to arrange for the housing of the occupants at city expense. When it was possible to place property in habitable condition, a definite time limit was set for the improvement. Among the five districts surveyed, the highest infant mortality rate found was 250 per thousand live births. Although the statistical study has not been completed, efforts thus far have been directed to showing the advisability of demolishing the so-called slum district.

DISTRICT OF COLUMBIA

Society News.—The Medical Society of the District of Columbia has authorized its committee on civic health to provide volunteer physicians to aid in a temporary clinic at the so-called Bonus Army camp. Dr. Donald S. Knowlton is director of the clinic. The action was taken as a measure to protect public health.

Hospital Discontinues Undergraduate School.—The board of directors of the Children's Hospital, Washington, put into effect, April 1, a new plan which stops the admission of new students in its training school and which accepts only graduate and affiliate students for nursing service. Students already in the school will be graduated on satisfactory completion of their course.

ILLINOIS

Fifty Years of Practice.—An open-air dinner was given by the Randolph County Medical Society, June 17, in honor of Drs. James W. Weir, Sparta, and William A. James, Chester, to celebrate their completion of fifty years in the practice of medicine. Speakers included Dr. William K. McIntyre, St. Louis, on "Pruritus Ani."

Society News.—A symposium on cancer was conducted before the La Salle County Medical Society in Ottawa, June 21, by Drs. Peter A. Nelson, Jr., Joseph E. F. Laibe and Herbert E. Schmitz, all of Chicago.——Dr. Samuel M. Feinberg, Chicago, addressed the Carroll County Medical Society at Savanna, June 17, on "Respiratory Allergy."

Chicago

Society News.—The officers of the Chicago Academy of Criminology for the coming year are: president, Edwin H. Sutherland, Ph.D., department of sociology, University of Chicago; vice presidents, Dr. Ludvig Hektoen, director, John McCormick Institute for Infectious Diseases; Dr. Paul L. Schroeder, director, Institute for Juvenile Research, and Arthur J. Todd, Ph.D., department of sociology, Northwestern University, and secretary, Dr. Meyer Solomon, department of neurology, Northwestern University Medical School.

Portrait of Dr. Bensley.—Presentation of a portrait of Dr. Robert R. Bensley was made to the University of Chicago, June 14, when a group of Dr. Bensley's students, colleagues and other friends gathered at a dinner given in his honor. Dr. Bensley is professor of anatomy in the Division of Biological Sciences at the university and has been a member of the department since 1901. The speakers included Dr. Gotthelf Carl Huber, professor of anatomy, University of Michigan Medical School, Ann Arbor, who spoke on behalf of the science of anatomy; Julius Stieglitz, Ph.D., chairman, department of chemistry, representing the faculty of the university, and Charles Judson Herrick, Sc.D. Richard E. Scammon, Ph.D., formerly dean of the division and now professor of anatomy at the University of Minnesota, was among the guests. The portrait was painted by Mr. Edmund Giesbert of the art department of the University of Chicago.

Maxwell Street Dispensary Under New Plan.—Beginning July 1, the Maxwell Street Dispensary of the Chicago Lying-In Hospital will be operated as a neighborhood maternity clinic, for a period of ten years. The dispensary will be known as the Chicago Maternity Center, and the lying-in hospital will continue to work in affiliation with it. The hospital had its beginning in the dispensary thirty-seven years ago, when Dr. Joseph B. De Lee, who is in charge of the hospital, founded it in four rooms of a tenement at Maxwell Street and Newberry Avenue. Since then the dispensary work has been carried on continuously. Hospital care is provided for homeless expectant mothers, but most of the work of the staff is done in the homes of the poor. Free nursing and medical service are furnished. The change in management was necessary because of lack of funds. As the closing of the institution would deprive women of the district of the proper care, it is hoped that sufficient funds will be procured to assure its continued operation. Dr. De Lee will continue as chief of the consulting staff.

Society for Personality Study.—Dr. Meyer Solomon, associate in neurology, Northwestern University Medical School, was elected president of the Chicago Society for Personality Study, organized May 25. Other officers elected are Ernest W. Burgess, Ph.D., professor of sociology, University of Chicago, vice president, and Dr. Paul L. Schroeder, professor and head of the department of criminology, University of Illinois College of Medicine, secretary. Charter members of the society include Harvey Carr, Ph.D., professor of psychology, University of Chicago; Dr. John Favill, associate clinical professor of neurology, Rush Medical College, and Robert H. Gault, Ph.D., professor of psychology, Northwestern University. It is the intention of the society to study human behavior and personality from all angles. Monthly meetings will bring together psychiatrists, psychologists, sociologists, anthropologists, educators, physiologists, biochemists, political scientists, criminologists and others concerned with advancement of the knowledge of personality. Problems to be studied will comprehend family situations, incompatibility, delinquency, the alcohol and drug habits, cerebral fatigue, constitutional make-up, and others. Membership will be limited to 100.

INDIANA

Dr. Barnhill Honored.—Resolutions of appreciation and a gold watch were presented to Dr. John F. Barnhill, Miami Beach, Fla., at the close of a graduate course on the eye, ear, nose and throat, which he conducted at Indiana University School of Medicine recently with the assistance of members of the faculty. Dr. Barnhill has been professor of surgery of the head at Indiana University School of Medicine for many years. He was secretary of the Section on the Eye and Ear of the American Medical Association from 1901 to 1903, and chairman in 1904.

Dr. Gatch Appointed Dean of Indiana University.—Dr. Willis D. Gatch, professor of surgery in the Indiana University School of Medicine, Indianapolis, since 1911, has been appointed dean of the school to succeed Dr. Charles P. Emerson. Dr. Gatch has been acting dean of the school since Dr. Emerson's departure last fall to engage in the inspection of missions in the Far East on behalf of the Rockefeller Foundation. He was graduated from Indiana University in 1901 and received his degree of doctor of medicine from Johns Hopkins University School of Medicine in 1907. Dr. Emerson, who will return soon, has been elected research professor in the medical school. He has been professor of medicine and dean of the school since 1911.

LOUISIANA

Bill Introduced.—H. 737 proposes to prohibit the issuance of marriage licenses unless both parties to the proposed marriages present certificates from a coroner stating that they are free from syphilis. It is to be the duty of coroners to take samples of blood from both parties to the proposed marriages and to mail such samples to the state board of health for Wassermann tests. If the reactions to the tests are negative, coroners are to issue medical certificates, which authorize the proper officials to issue marriage licenses.

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended June 18, indicate that the highest mortality rate (15) appears for New Orleans and the rate for the group of cities as a whole, 10.1. The mortality rate for the corresponding period last year for New Orleans was 14.1 and for the group of cities, 10.5. The annual rate for eighty-five cities for the twenty-four weeks of 1932 was 12.1, as against a rate of 13 for the corresponding period of 1931. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

MARYLAND

Lectures for Midwives.—Lectures for midwives and applicants for licenses to practice the profession were started at the Baltimore City Health Department, June 7, under the auspices of the state department of health. They will be given by Dr. Max Alexander Novey, chief of the obstetric division of city department, and Dr. William H. F. Warthen, chief of the bureau of child welfare.

Full Time Health Positions.—Dr. William J. French, New York, has been appointed full time health officer of Howard County, with headquarters at Ellicott City, and Dr. Robert H. Johnson, Brookhaven, Miss., full time health officer of Somerset County, with headquarters at Princess Anne. With the installation of full time health service in these counties, there are but two counties remaining in the state with part time health service (THE JOURNAL, Oct. 10, 1931, p. 1082). At present, 94.3 per cent of the rural population of Maryland is covered by full time health service and 97.1 per cent of the state, including Baltimore. Dr. French was director of the Child Welfare Commission of Delaware and the Fargo Child Health Demonstration of the Commonwealth Fund. Dr. Johnson has been director of the Lincoln County Department of Health, cooperating with the Mississippi State Board of Health.

Consultants to City Health Department.—The following physicians were appointed to serve as consultants to the Baltimore Health Department, May 26, according to Baltimore *Health News:*

Dr. Arthur G. Barrett, president, West Baltimore Medical Association.
Dr. Thomas S. Cullen, Maryland State Board of Health.
Dr. Allen W. Freeman, professor of public health administration, Johns Hopkins School of Hygiene and Public Health.
Dr. Wade Hampton Frost, dean, Johns Hopkins School of Hygiene and Public Health.
Dr. Andrew C. Gillis, professor of neurology, University of Maryland School of Medicine.
Dr. George Milton Linthicum, chairman, public health committee, Baltimore City Medical Society.
Dr. Arthur J. Lomas, superintendent, University of Maryland Hospital.
Dr. Maurice C. Pincoffs, professor of medicine, University of Maryland School of Medicine.
Dr. Robert H. Riley, director, Maryland State Department of Health.
Dr. James M. H. Rowland, dean, University of Maryland School of Medicine.
Dr. George Walker, board of supervisors of city charities.
Dr. William H. Welch, director emeritus, Johns Hopkins School of Hygiene and Public Health.
Dr. Samuel Wolman, president, Maryland Tuberculosis Association.

The appointment of this group in this capacity was one of the major recommendations of Dr. Joseph W. Mountin, following his recent survey of health and hospitals of Baltimore.

MASSACHUSETTS

George Strong Derby Fund.—Contributions to a permanent fund to be established at the Massachusetts Eye and Ear Infirmary, Boston, in memory of Dr. George Strong Derby, are being collected. Dr. Derby, until his death, Dec. 12, 1931, was Williams professor of ophthalmology at Harvard University Medical School. The income from the fund will be devoted to projects in which he was interested; at present, it will be used toward the salary of a social worker engaged in the care of patients suffering from glaucoma. Other purposes will be determined from time to time as recommended by the staff of the infirmary and authorized by the board of managers.

MICHIGAN

Society News.—The unveiling of a portrait of Dr. James Decker Munson, for several years medical superintendent of the Traverse City State Hospital, took place, June 10, at a ceremony in the hospital. The portrait was presented by the Grand Traverse-Leelanau County Medical Society and the Traverse City State Hospital Nurses' Alumni Association.——The Kalamazoo Academy of Medicine was addressed, June 21, by Nathan Sinai, D.P.H., Ann Arbor, on "Economic Changes in Medicine," and Dr. John E. Gordon, Detroit, "Acute Infectious Diseases of the Central Nervous System."——Dr. George A. Kamperman, Detroit, addressed the Kent County Medical Society at Grand Rapids, May 26, on "Medical Aspects of Birth Control."——The Macomb County Medical Society heard a paper on "Preventive Medicine and Abortion," June 6, by Dr. Harold C. Mack, Detroit.

MINNESOTA

"Eye Specialist" Sentenced.—Elliott Wilkinson, one of a group of alleged fake "eye doctors" who swindled southern Minnesota residents out of several thousand dollars eight years ago, pleaded guilty to a charge of grand larceny in district court in New Ulm, and was sentenced by Judge A. B. Gislason to a term of one to five years in Stillwater Penitentiary, according to the St. Paul *Dispatch,* April 11. It was said that the charge was the outgrowth of an alleged fake eye operation performed on a woman in September, 1924. Wilkinson also pleaded guilty to a charge of attempted grand larceny in connection with another operation on a man the same year. The judge imposed a similar sentence and then suspended it. Wilkinson was one of the group of eyesight swindlers recently arrested in Texas and extradited to Minnesota. It is reported there are four felony warrants awaiting him in California, all in connection with asserted eyesight swindling operations. Authorities of other states reporting eyesight swindles may be interested in investigating Elliott Wilkinson's activities.

MISSOURI

Personal.—Dr. Joseph Erlanger, professor of physiology, Washington University School of Medicine, St. Louis, was recently given the degree of doctor of laws by the University of California.——Friends of Dr. William H. Allen, Rich Hill, recently held a gathering to observe the physician's eighty-second birthday. Dr. Allen has practiced medicine in Rich

Hill for fifty-seven years and is an honor member of the Bates County Medical Society.

Bulletin on Mental Hygiene.—The *Mental Hygiene Observer* appeared in April, published by the Missouri Society for Mental Hygiene. The officers of the recently reorganized group are Drs. Malcolm A. Bliss, St. Louis, honorary president; James Lewald, St. Louis, president; Emmett F. Hoctor, Farmington, vice president, and Mr. A. W. Jones, secretary. The activities of the organization included a survey of the insane in Missouri, in 1919, which was financed by the Rockefeller Foundation.

MONTANA

State Medical Meeting.—The fifty-fourth annual meeting of the Medical Association of Montana will be held at Miles City, July 13-14, under the presidency of Dr. John H. Garberson, Miles City. The program will include the following speakers:

Dr. Edward H. Cary, Dallas, Texas, President, American Medical Association, "Some Problems of the Modern Doctor."
Dr. John A. Evert, Glendive, "Boehler Treatment of Leg Fractures."
Dr. George E. Brown, Rochester, Minn., "Present Concepts of Hypertension."
Dr. John A. Wolfer, Chicago, "Gall Tract Disease: Surgical Indications."
Dr. Fred F. Attix, Lewistown, "Comments on Local Medical History for Permanent Record."
Dr. George J. McHeffey, Butte, "Oliver Wendell Holmes—Physician."
Dr. Archie L. Gleason, Great Falls, "Subacute and Chronic Pulmonary Lesions in Children."
Dr. Herbert H. James, Butte, "Late Treatment of Cancer of the Cervix with Radium."
Dr. Arthur R. Kintner, Missoula, "Fever of Unknown Origin."
Dr. Harold W. Dobbin, Missoula, "Foreign Body in the Heart."
Dr. Harold C. Joesting, Butte, "Advantage of Unsweetened Evaporated Milk for Infants."

NEW JERSEY

State Medical Election.—Dr. A. Haines Lippincott, Camden, was elected president of the Medical Society of New Jersey at the annual session in Atlantic City, June 17. Vice presidents are Drs. Frederic J. Quigley, Union City; Lancelot Ely, Somerville, and Marcus W. Newcomb, Browns Mills. Drs. John Bennett Morrison, Newark, and Elias J. Marsh, Paterson, were reelected secretary and treasurer, respectively.

License Revoked.—The license to practice medicine and surgery in the state of New Jersey of Dr. Samuel Dixon Mayhew, Wildwood, was recently revoked by the state board of medical examiners because of chronic inebriety.

Society News.—Dr. Leon S. Loizeaux, New York, addressed the Mercer County Medical Society, Trenton, May 11, on obstetric technic.——Drs. Grant Thornton and James Burns Amberson, Jr., New York, were the speakers at a meeting of the Morris County Medical Society, Morristown, May 19, on "Early Diagnosis of Tuberculosis" and "Clinical Course of Tuberculosis," respectively.——At a meeting of the Passaic County Medical Society, Passaic, May 12, Dr. Alfred Gordon, Philadelphia, spoke on "Psychoneuroses in Relation to General Medicine."

NEW YORK

Syracuse Alumni Meeting.—Dr. Edward N. Packard, Saranac Lake, was elected president of the Medical Alumni Association of Syracuse University at the annual meeting, June 2. Clinical conferences and demonstrations marked the reunion. Dr. Francis Carter Wood, New York, was among the speakers at the annual banquet, presenting an address on "The Cancer Situation and the Medical Profession." It was announced that Dr. Albert G. Swift has been appointed professor of surgery to succeed Dr. Edward S. Van Duyn.

Symposium at Saranac Lake.—A medical symposium was held at the National Variety Artists Sanatorium at Saranac Lake, May 28-30, for students at the Trudeau Sanatorium. Among the physicians who participated were Drs. Pol N. Coryllos, New York, who spoke on "Chest Surgery in Tuberculosis"; Edward C. Reifenstein, Syracuse, "Acute Bacterial Endocarditis"; Lemuel Whittington Gorham, Albany, "Pathologic Significance of Cardiac Infarcts"; David H. Ballon, Montreal, "Carcinoma of the Esophagus" and Aaron Brown, New York, "Diagnosis and Treatment of Seasonal Hay Fever."

New York City

Changes at Long Island College.—Dr. Alfred C. Beck has been appointed professor of obstetrics and gynecology at Long Island College of Medicine to succeed the late Dr. John O. Polak. Edgar D. Congdon, who for the past five years has been in charge of the department of anatomy at the Medical School of Chulalankarana University, Bangkok, Siam, has been appointed professor of anatomy. A new division of preventive medicine and community health has been created within the department of medicine, with Dr. Alfred E. Shipley, associate professor of preventive medicine and hygiene, at its head.

Smuggling Uninspected Milk.—Wholesale smuggling of milk and cream into New York from uninspected sources has been reported by the health department. Within the past four months, the department has detailed 191 inspectors with special police authority, who with the aid of fifteen men assigned by the police department have patrolled ferries, bridges, tunnels and detraining points. They barred 25,000 pounds of milk products and destroyed 27,490 pounds of cream from the Middle West, according to the report. Permits of three wholesale dealers are said to have been revoked and action is pending against others. It was said that gangsters were recognized guarding the contraband trucks.

Honor Graduates.—Prizes for excellence of work were awarded to members of the graduating class at Cornell University Medical College at the annual commencement, June 3, as follows:

John Metcalfe Polk Memorial Prizes to students with highest standing—Harold Russell Meyers, Jr., Rudolf Friedhold Bachmann and Charles Kevork Bogoshian.

For efficiency in otology—Jesse Potter Eddy, Rudolf F. Bachmann.

William M. Polk Memorial Prizes in Gynecology—Robert Edward Rothenberg, Abbey David Seley and Henry Carnie Lawson.

Gustav Seeligman Prizes in Obstetrics—Marion Fairfield and Abbey David Seley.

Alfred Moritz Michaelis Prize for efficiency in general medicine—Raymond Gettinger.

For efficiency in neurology—Harold Russell Meyers, Jr.

Dr. Walter L. Niles, professor of clinical medicine at Cornell, delivered the graduating address.

NORTH CAROLINA

Personal.—Dr. Greene L. Rea has been appointed acting health officer of Charlotte, succeeding Dr. Wilbur A. McPhaul, who recently resigned to become health officer of Pensacola, Fla.

University News.—Eighteen students made up the first class graduated from Duke University School of Medicine, Durham, June 8. As a part of the exercises, the class planted ivy sent from the home of Sir William Osler, in Oxford, England, at the entrance to the medical school. Dr. William Sydney Thayer, Baltimore, a former pupil of Osler, made an address at this ceremony and during the commencement season gave a clinic on cardiac disease at Duke Hospital.

Society News.—Dr. Thomas R. Brown, Baltimore, addressed the Eighth District Medical Society at its annual meeting in Greensboro, May 24, on "Medical and Surgical Treatment of Certain Diseases of the Digestive Tract." Among other speakers were Drs. Harry L. Johnson, Elkin, "Treatment of Acute Empyema"; Frederick C. Hubbard, North Wilkesboro, "Gunshot Wounds of the Abdomen" and Russell O. Lyday, Greensboro, "Indications for Conservative and Radical Surgery in Peptic Ulcer."

PENNSYLVANIA

Society News.—Drs. John B. Lownes and James L. Richards, Philadelphia, addressed the Schuylkill County Medical Society, Shenandoah, June 14, on gonorrhea.——A symposium on gastric and duodenal ulcer was presented at a joint meeting of the medical societies of Clearfield, Jefferson and Indiana counties, at the Crystal Springs Hunting Club, near Clearfield, June 23, by three members of the University of Pittsburgh School of Medicine. Dr. Roy R. Snowden discussed the subject from the point of view of the internist; Dr. George W. Grier, that of the roentgenologist, and Dr. Edwin P. Buchanan, that of the surgeon.

Annual Cancer Study Course.—The fourth annual course of study in cancer will be held in Lewistown, August 11, under the auspices of the commission on cancer of the Medical Society of the State of Pennsylvania. Drs. George P. Muller, Philadelphia, and Frederick B. Utley, Pittsburgh, will speak on the surgical and medical aspects of cancer, respectively. In the afternoon, clinics will be conducted by Drs. William Wayne Babcock, Philadelphia, on "Diseases of the Breast"; George E. Pfahler, Philadelphia, "Diseases of the Skin" and Dean Lewis, Baltimore, "Diseases of the Abdomen." During the afternoon also Dr. Byron H. Jackson, Scranton, will conduct a round table discussion and demonstration of roentgenograms. Drs. Charles Falkowsky, Jr., Scranton, Harold L. Foss, Danville, and Jonathan M. Wainwright, Scranton, will make addresses in the evening.

Philadelphia

Professor Donaldson Honored at Seventy-Five.—The volume of the *Journal of Comparative Neurology* beginning with the June issue is dedicated to Henry Herbert Donaldson, Ph.D., professor of neurology at the Wistar Institute of Anatomy and Biology, in honor of his seventy-fifth birthday, which occurred, May 12. Professor Donaldson has been associated with the institute since 1906. Previous to that time he was professor of neurology at the University of Chicago for fourteen years and also taught at Johns Hopkins and Clark universities. In 1895 he published a book on the growth of the brain and in 1915 the results of his studies of development in the rat. Dr. Donaldson was president of the American Association of Anatomists in 1916 and of the American Society of Naturalists in 1927.

Tumor Study Bureau Offers Slides.—The Central Bureau for the Study of Tumors, Lankenau Hospital, Philadelphia, announces that it has available a number of sets of microscopic slides. Each set contains 100 slides from 100 different tumors. Dr. Joseph McFarland, director of the bureau, has prepared a book of mimeographed notes in which the source of each tumor is given, its clinical course briefly summarized, the diagnosis and prognosis, and other explanations. The slides have numbers etched on them, are without labels and are unknowns until identified by reference to a number in the lid of the box. The collection, which is sold for $100 a set for the benefit of the bureau, is adapted to a variety of purposes, such as the self-instruction of resident hospital pathologists in oncology, examination of students and hospital residents, material for microprojection in the classroom, standards for comparison in making diagnosis of the rarer tumors, and raising the standard of work done in hospital laboratories by showing the technicians how satisfactorily prepared sections should look. As the material was used up in making the slides, they cannot be duplicated, the announcement says. Inquiries should be directed to the bureau, Lankenau Hospital, Philadelphia.

SOUTH CAROLINA

Faculty Changes.—At the annual commencement of the Medical College of the State of South Carolina, June 2, these faculty appointments were announced:

Dr. Francis G. Cain, assistant professor of gynecology.
Dr. Wythe M. Rhett, assistant professor of pediatrics.
Dr. Archibald Johnston Buist, Jr., assistant professor of gynecology.
Dr. Joseph I. Waring, lecturer in pediatrics.

Dr. Max William Hemingway of the graduating class was awarded the Ravenel cup for a thesis on "The Maternity Death Rate in South Carolina."

VIRGINIA

Graduate Courses Organized.—The first circuit for the graduate course in prenatal and postnatal care, which is being given under the auspices of the Medical Society of Virginia through a grant from the Commonwealth Fund (The Journal, June 4, p. 1999) was begun during the first week of June. It includes the medical societies of Nelson, Rockbridge, Albemarle and Augusta counties and the Lynchburg Academy of Medicine. Two-hour sessions will be held weekly for ten weeks under the direction of Dr. Maxwell E. Lapham, formerly of Philadelphia, who was recently appointed to carry out this extension of the state society's activities. Among the subjects covered are early diagnosis of pregnancy, prenatal examination, instructions to patients, preparation for and management of labor and delivery, care of new-born infants, postpartum complications and toxemias of pregnancy. A second circuit of five centers will be begun immediately after the conclusion of the present series in August.

WISCONSIN

District Meeting.—Dr. Morris Fishbein, Chicago, was the guest speaker at an evening meeting of the Sixth District Medical Society at Appleton, June 9, on "Present-Day Trends of Private Practice in the United States." At an afternoon session, demonstrations were presented on the following subjects: treatment of fractures, by Dr. Ralph M. Carter, Green Bay; heart disease, Dr. Newell C. Gilbert, Chicago; varicose veins and ulcers, Dr. Herman O. McPheeters, Minneapolis, and joint and back injuries, Dr. Harry E. Mock, Chicago. Counties in the sixth district are Brown, Kewaunee, Door, Outagamie, Winnebago and Fond du Lac.

Course in Pediatrics.—A course of lectures and clinics in the diseases and feeding of children will be offered to Wisconsin physicians, beginning July 11 and continuing six weeks, under the auspices of the Wisconsin State Medical Society, the University of Wisconsin Medical School and the University of Wisconsin Extension Division. Dr. Wayne A. Rupe, St. Louis, will be the instructor in the course, which will be given in Milwaukee, Waukesha, Racine, Kenosha and Burlington. Among the topics listed for study are newer methods of prevention and treatment of certain contagious diseases, breast feeding and artificial feeding, colic, diarrhea, infantile skin diseases, and treatment of pyelitis, enuresis, nephritis and nephrosis.

Society News.—The Brown-Kewaunee Counties Medical Society at a meeting in Green Bay, May 26, voted to endow a room in the old Fort Howard Hospital building, Green Bay, and dedicate it to the memory of Dr. William Beaumont, who had his office in the building when he was stationed at Fort Howard. The society plans to gather as many Beaumont relics as possible in the room and may eventually establish its library there.——Members of the Fond du Lac, Outagamie and Green Lake county medical societies were guests of the Winnebago County society, at Sunny View Sanatorium, Winnebago, May 20, when Dr. Joseph W. Gale, Madison, spoke on "Surgical Methods in the Treatment of Pulmonary Tuberculosis."——Drs. Louis Bothman and Francis L. Lederer, Chicago, addressed the Central Wisconsin Society of Ophthalmology and Oto-Laryngology, June 4, in Green Bay. Dr. Bothman spoke on "Cataract Surgery in India" and "Detachment of the Retina: Diagnosis and Treatment," and Dr. Lederer, "Mastoiditis: Its Pathology and Indications for Operation" and "Present Status of Malignancies About the Head and Neck and Their Management."——Drs. Austin C. Davis and John M. Berkman, Rochester, Minn., addressed the Chippewa County Medical Society, Chippewa Falls, May 10, on "Adenomatous Goiters" and "Chronic Fevers," respectively.——Drs. Frederic W. Schlutz, Chicago, and Harold B. Miner addressed the Milwaukee Pediatric Society, June 8, on "Significance of the Vitamins in the Nutrition of the Child" and "Congenital Heart Disease," respectively.

GENERAL

Hospital Meeting.—The hospital associations of Virginia and North and South Carolina held a joint meeting at Richmond in May. Paul H. Fesler, Chicago, president of the American Hospital Association, addressed the opening meeting on "Caring for the Veteran in Civilian Hospitals." Dr. Richard B. Davis, Greensboro, was elected president of the North Carolina society; John Bell Williams, D.D.S., Richmond, for Virginia, and Mr. F. O. Bates, Charleston, for South Carolina.

New Members of National Board of Examiners.—At the annual meeting of the National Board of Medical Examiners in Washington, May 2, Dr. Walter L. Bierring, Des Moines, was elected to the board to succeed John G. Bowman, LL.D., Pittsburgh, and Dr. Harold Rypins, New York, to succeed Dr. David Strickler, Denver.

Exhibit on Eugenics.—An exhibit showing the history, content, present researches and trends in eugenics is planned in connection with the Third International Congress of Eugenics, which is to be held at the American Museum of Natural History, New York, August 21-23. The exhibit will be on view at the Museum from August 22 till September 22. Materials for the exhibit will be shown in (1) pedigree charts, (2) statistical charts and tables, (3) photographs and maps, (4) models, casts and drawings, (5) books and scientific papers, (6) scientific apparatus, and (7) living specimens. The main subjects to be represented are: human traits and qualities, human genetics, heredity and environment, heredity and development, human migration, mate selection, differential fecundity, population studies and applied eugenics.

Births Decline in World Centers.—The birth rate in twenty-four of the world's largest cities showed a decline in 1931 of more than 5 per cent from the 1930 rate, according to figures recently made available for forty-two cities. Only two cities, Glasgow and Rio de Janeiro, recorded increases. Berlin had the lowest rate, 8.7 per thousand of population, while Dresden and Frankfort-on-Main were only slightly larger. The highest rate reported was for Madras, India, 40.5. In the United States Pittsburgh had the highest rate, 20.9, but all the fourteen American cities with populations of more than 500,000 reported that the birth rates had declined during 1931. The declines varied from 22 per cent in Boston to 1 per cent in Washington, D. C. The lowest rate in the United States was that of San Francisco, 11.8.

Foundation for Cancer Research.—William H. Donner, retired steel manufacturer of Villanova, Pa., has established a fund of $2,000,000 for the furtherance of cancer research on a world-wide basis, to be known as the International Cancer Research Foundation. Mr. Donner stipulated that the fund should not be used to erect new buildings or laboratories, but to assist scientists to develop new theories and new research workers and to increase general interest in the cancer problem. The income of the fund is to be distributed to institutions throughout the world, not more than 35 per cent to any one and not more than from 50 to 60 per cent within the United States. Mr. Donner, who established the fund because of the death of a son in 1929, will act as president; Thomas S. Gates, LL.D., president of the University of Pennsylvania, Philadelphia, is vice president, and the directors are Edward R. Weidlein of Mellon Institute for Industrial Research, Pittsburgh, and former Senator George Wharton Pepper, Philadelphia.

News of Epidemics.—Reports to the U. S. Public Health Service from forty-seven states for the four weeks ended May 21 showed 679 cases of typhoid. This is the lowest figure in four years for the corresponding period, only the South Atlantic and South Central states showing any increase. Newspapers recently reported an outbreak in a Negro settlement near Charleston, W. Va., in which a family of seven had the disease and three died. Prompt immunization of all inhabitants of the community checked the spread of the infection. Seven cases in a family near Arcadia, Ind., were traced to contamination of a well on the premises. Pollution of a brook near a baseball diamond was found responsible for two cases in high school players in Worcester, Mass. Thirty-one deaths have been reported from North Carolina for the first quarter of the year, more than twice as many as for the same period in 1931.——Measles has been epidemic in New York State for several weeks, the high point having been reached during the week ended May 21, when 2,643 cases were reported. The number had declined to 1,749 for the week ended June 11, according to *Health News*.——Drs. Fred L. Soper and Allen M. Walcott of the Rockefeller Foundation have gone to La Paz, Bolivia, to assist the Bolivian government in fighting an epidemic of yellow fever in the Santa Cruz district, it is reported. The Foundation has agreed to subscribe $18,000 and the government, 75,000 bolivianos to finance the campaign for eighteen months.

PHILIPPINE ISLANDS

Medical Activities.—A museum depicting the progress of medical and surgical science in the islands will be developed at the University of Santo Tomas, using as a nucleus the collections of Dr. Jose P. Bantug, Manila, who suggested the plan.——Members of the Philippine Health Service gave a banquet, March 28, in honor of Major George F. Lull, health adviser to the governor-general, who returned to the United States. A watch was presented to Major Lull.——Dr. Sixto A. Francisco, Las Banos, is a delegate to the Pacific Regional Health Conference to be held in Honolulu in July and will later make an investigation in the United States of the health of students as affected by college work and extracurricular activities, especially athletics.

CANADA

Physicians Urge Control of Alberta Radium.—Immediate action to prevent the deposits of radium recently found in northern Alberta from falling into the hands of a foreign monopoly was urged on the Canadian government in a resolution adopted by the council of the College of Physicians and Surgeons of Alberta at a recent meeting. The resolution pointed out that heretofore the supply of radium has been limited by the control of the supply by the European-African syndicate and cited reports that foreign commercial interests are now making efforts to obtain control of the Canadian pitchblende deposits.

Resigns as Dean at Eighty-Four.—Dr. John Stewart, 84, has resigned as dean of the Faculty of Medicine of Dalhousie University, Halifax, N. S. Born on Cape Breton Island, Dr. Stewart began his medical studies at Dalhousie but was graduated from the University of Edinburgh Faculty of Medicine in 1877, and for a year was house surgeon under Sir Joseph Lister in London. In the World War Dr. Stewart served overseas as commander of the No. 7 (Dalhousie) Stationary Hospital Unit and in March, 1918, was appointed consulting surgeon at headquarters. On his seventieth birthday King George V reviewed his unit in France. After his return he was appointed dean of the faculty of medicine at Dalhousie in 1920. He had been professor of surgery in the school for many years. The successor to Dr. Stewart is Dr. Harry Gondge Grant, a graduate of Dalhousie in 1912, who is at present connected with the state health department of Virginia, at Richmond, as a member of the International Health Division of the Rockefeller Foundation. Dr. Grant spent several years studying in England and was lecturer in medicine at his alma mater from 1921 to 1925. He also succeeds the late Dr. William H. Hattie as professor of public health.

PORTO RICO

Dr. Bachman Appointed Director.—George W. Bachman, Ph.D., associate professor of parasitology in the School of Tropical Medicine of the University of Porto Rico under the auspices of Columbia University, has been appointed director of the school. Dr. Bachman, who was appointed acting director at the beginning of the past academic year, succeeds Dr. Earl B. McKinley, who resigned to become dean of George Washington University School of Medicine, Washington, D. C. A native of Ohio, Dr. Bachman received the degree of doctor of philosophy from the University of Chicago in 1927. He was also promoted to a full professorship in parasitology.

FOREIGN

Memorial to Dr. Todd.—An annual prize in medical jurisprudence will be established at the University of Sydney, Sydney, Australia, in honor of the late Dr. Robert Henry Todd, as soon as sufficient funds are available. Dr. Todd was lecturer in medical jurisprudence at the university for twenty years. Subscriptions may be sent to the medical secretary, New South Wales Branch of the British Medical Association, British Medical Association House, 135 Macquarie Street, Sydney.

Medical Center in Mexico.—A complete new medical center in connection with the School of Medicine of Nuevo Leon, Monterrey, was recently arranged for when the governor and secretary of the state of Nuevo Leon signed the contracts. The plan now in formulation contemplates a new medical school, a general hospital of 500 beds, a nurses' home, a separate wing for tuberculosis, one for the insane, and another for communicable diseases. It is expected that the entire project will require about five years to complete. The governor has appointed a special committee of the Monterrey branch of the Mexican Medical Association, headed by Dr. Francisco L. Rocha, to act in an advisory capacity. At present there is in the city of Monterrey a hospital of about 350 beds known as the Gonzalez Hospital, constructed about 100 years ago. Here are concentrated units for the treatment of the insane, tuberculosis and communicable diseases, all of which are antiquated, it was said, and must be replaced by modern accommodations.

Chinese Physicians and Marriage.—To obtain information concerning the distribution of physicians in China the medical schools of Cheeloo, St. John's, Yale-in-China and Hacket sent questionnaires to 600 graduates, of whom 211 returned usable replies. Among other things, the questionnaire asked the age at time of marriage, and the number of children with their ages. According to the *Chinese Medical Journal*, 171, or 81 per cent, of the 211 graduates were married. In this group of Chinese physicians who gave the necessary dates, eighty were married before graduation and sixty-three afterward. In this total of 143, marriage occurred an average of 2.3 years before graduation. The age of marriage varied from 14 to 46 years, though in three instances the ages were given as 4, 9 and 12 years. The greatest number of marriages occurred between the twenty-fifth and twenty-ninth year, the peak age being 26; 14 per cent were married before the age of 20. These results are in marked contrast with the age of marriage in the general population, the journal states. Among 4,000 men attending an outpatient medical clinic in Peiping, 54 per cent gave their age at marriage as less than 20. The Chinese married physicians in the questionnaire group averaged 3.46 living births per family, or one birth for 3.26 years of marriage.

Congress on History of Medicine.—The ninth Congress of the International Society for the History of Medicine will be held in Bucarest, Rumania, in September. Subjects chosen for discussion are the evolution of medicine in the Balkan states and the protection of Europe against bubonic plague. Those who wish to read papers are requested to send the title and a summary of their papers as soon as possible to the office of the congress, Bucarest II, Str. Stirbey Voda, 86. Lectures are limited to forty-five minutes and explanations to fifteen minutes and may be in English, French, German, Italian or Spanish. Participants may wish to join others at a general meeting place, which is being arranged in Trieste. Stopovers will be arranged at Athens, at Istambul and at Constantza, Rumania, where the party will take the train for Bucarest.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 4, 1932.

Lord Moynihan on the Advance of Medicine

In his Romanes lecture at Oxford, Lord Moynihan, president of the Royal College of Surgeons, said that surgery had almost reached the end of its progress along the lines which it so far had followed. The most extensive and delicate operations were carried out on every organ in the body, including those only recently made accessible, with a success that not even Lister himself could have believed possible. New methods of treatment might no doubt appear in their further development, but so long as cutting operations of the kind now practiced had to be applied, it was hardly possible that their success could be improved on except through increasing the patient's powers of resistance by preliminary preparation. Heretofore surgeons had been engaged in discovering methods of dealing with structural diseases by mechanical devices. Now they must concern themselves with recognition and correlation of those manifold bodily ailments which result from changes in the function of organs. Patients sought their aid only, as a rule, when something had gone seriously wrong. Hospitals were filled with examples of advanced disease. What would surely advance their knowledge and perhaps lead on a large scale to prevention of disease was hospital research on those suffering from slighter ailments. At present, research work and clinical inquiry were conducted at far distances from each other by men who rarely met. Experimental work should more often be suggested, and even carried out, by those whose experience in clinical work has shown them exactly where investigation might become most profitable. Physiology today was unhappily losing the close relation it had formerly had with clinical medicine. The cleavage was all to the advantage of physiology, all to the detriment of clinical medicine. Physiology had wandered away on its own researches. Its biologic inquiries had been conducted almost exclusively on animals, though during this time the surgeon had gained incalculable victories for clinical medicine. In the future the physiologist and the surgeon should make a common attack on the innumerable mysteries of disease. The greatest of all discoveries in medicine throughout the ages had been made by those directly concerned with clinical problems.

The Medical Problems of Contraception

A conference on the medical problems of contraception has been held under the auspices of the National Birth Control Association. It was attended by more than 200 laboratory workers, medical officers of clinics, health officers and private physicians. Sir Thomas Horder is president of the National Birth Control Association.

Dr. L. F. Hogben, professor of social biology at the London School of Economics, discussed biologic methods of contraception, which were of two kinds—one based on serologic technic, the second on the control of reproductive activity by hormones circulating in the blood stream. The injection of seminal fluid into warm-blooded animals resulted in the formation of spermatotoxins, which in the female produced sterility through their presence in the secretions of the genital tract or, perhaps, in the germ cells themselves. But much research remained to be done on the duration of the spermatotoxic effect before it would be possible to apply the serologic method with success. As to the second method, it was possible to destroy the reproductive elements of the gonads without affecting the cells that manufactured the hormones on which sexual behavior depended. He suggested that the two ovarian hormones estrin and lutein might be used for the production of sterilization.

A long discussion took place on the methods of birth control in use. Of mechanical contrivances, the vaginal diaphragm pessary was stated to be popular.

Road Accidents in 1931

A return just published shows that during 1931, in Great Britain, 6,691 persons were killed on the roads and 202,119 injured. In 1930 the figures were 7,305 killed and 177,895 injured. Thus while the reduction of fatal accidents is a matter for satisfaction, it is offset by an increase in the total number of accidents. Vehicles to which fatal accidents were attributable were as follows: private automobiles, 1,813; automobile vans and trucks, 1,399; motorcycles without pillion passenger, 980; motorcycles with pillion passenger, 451; automobile omnibuses and coaches, 736; motorcycles with sidecar, 184; electric cars and trolly omnibuses, 118; automobile cabs, 65; pedalcycles, 632; horse-drawn vehicles, 103; horses ridden and led, 18.

A Consultant Service Under the National Health Insurance Act

The national health insurance act provides only a service of general practitioners. If the services of a consultant or specialist are required the patient must either pay for it or go to a hospital. At a conference of the faculty of insurance, Dr. G. C. Anderson, deputy medical secretary of the British Medical Association, delivered an important address on the value of the provision of a consultant service. He pointed out that it was not long since the family doctor or general practitioner did not need to worry about roentgen examinations and the intricate laboratory methods of diagnosis and treatment that have been evolved of recent years. These aids are used in private practice, and he thought that insurance practice should approximate it as far as possible. The insurance physician has to depend on the outpatient department of hospitals for special diagnostic services, and as now organized they afford him little help in keeping abreast of modern medicine. The best way to sharpen his faculties and bring his methods down to date would be to bring him into active association with a hospital in his own area. The crying need of the general practitioner is for greater access to such an institution where he will find opportunities for acquiring knowledge at present difficult for him to obtain. Little such cooperation exists now, as the insurance practitioner rarely sees the consultant whose advice he is anxious to obtain, because of the impracticability of such an arrangement in the present overcrowded state of the outpatient departments. The provision of diagnostic facilities in the early stages of diseases, the early access of the insurance practitioner to the specialist in difficult and obscure ailments, and the consequent early treatment would prevent acute ailments from becoming chronic and should before long reduce the amount that is being expended on sick benefits.

The Religion of a Physiologist

Prof. J. S. Haldane stands alone among physiologists in troubling about philosophical problems and insisting that the phenomena of life transcend physical explanation. His Scottish blood may be responsible for this. Though not a member of any church, he delivered an address for "The Christian Evidence Society," entitled "Reality as Spiritual." He said that if the universe surrounding us is no more than the universe described by the physical sciences, we could proceed to prove from observation and experiment that we were also no more than part of it. But this conclusion was completely unwarranted. Our universe was the universe of our experience, while the universe of physical science was only an idealized universe, stripped of all the values actually present in it, since the conceptions of physical science, however useful for practical purposes, were incapable of describing values. The actual universe of our experience was a universe of personality. In it we found the fact of moral obligation—to promote and cherish truth, right and beauty so far as we could recognize them. That obligation was common to all men and its recognition united us and at the same time showed us that our experiences were no mere separable things but that within us was revealed the all-embracing personality which men called God. That fact gave to truth, right and beauty their authority, and so gave objectivity to our universe of experience as the manifestation of God.

Spahlinger's Reticence

In THE JOURNAL, March 5, page 828, it was reported that after years of secrecy, for which he has always been severely criticized in this country, Spahlinger professed to disclose his secrets by stating how his vaccines are prepared. But Sir Thomas Horder (THE JOURNAL, April 23, p. 1487) pointed out that he had failed to disclose how his serum was prepared, although it was with this that for twenty years he has claimed to cure tuberculosis. A further criticism of his reticence has come from Sir Frederick Menzies, health officer of the London County Council. He says that although Spahlinger claims that he has disclosed full details of his method of preparing his vaccine, the fact remains that so much information of fundamental importance is missing that no two competent bacteriologists, working independently on his formula, would be likely to produce the same preparation. He made inquiry into the Spahlinger method at the request of the Central Public Health Committee of the London County Council. His report is as follows: "From the information available there is no evidence which would at present justify the trial of this vaccine, under the auspices of the council, on human beings."

PARIS

(From Our Regular Correspondent)

May 25, 1932.

Is Multiple Sclerosis of Syphilitic Origin?

French pathologists are divided on the question of the etiology of multiple sclerosis. Some regard the disease as an infection due to a filtrable virus, although no case of contagion has ever been reported, and endeavor to find a curative serum obtained from monkeys inoculated with the pathologic nerve substance. Others regard it as a late manifestation of hereditary syphilis. At a recent meeting of the Société des médecins des hôpitaux de Paris, Mr. Mendelssohn presented a patient who showed unmistakable signs of hereditary syphilis. She presented a typical case of multiple sclerosis but was so much improved by syphilitic treatment that she may be said to have been cured. Paraplegia, tremor, abolition of the abdominal reflex and of the reflexes of the velum palatinum, exaggeration of the patellar and achilles reflexes, and the condition of the cerebrospinal fluid, all cleared up after four series of treatments with compounds of arsenic, bismuth, mercury and the iodides. This treatment was first instituted because the patient was affected with a mitral stenosis and because her father was syphilitic and her mother presented a positive Wassermann test. Mr. Mendelssohn emphasized the importance of the fact that the cerebrospinal fluid had returned to normal, which is exceptional in the observations of improvements heretofore published. Mr. H. Dufour supported the opinion of Mr. Mendelssohn as to the syphilitic etiology of multiple sclerosis and presented a patient whom he had been treating for twelve years with an antisyphilitic treatment repeated every year. The symptoms, which were progressing when treatment was first begun, have been stabilized for twelve years, which appears to indicate a favorable action of the drugs employed. The author stated that he had accepted since 1916 the syphilitic origin of multiple sclerosis, regarding it as an attenuated hereditary syphilis, but he added that he would be the first to grant the disease its autonomy if it should be shown to be due to a specific infectious agent. All the arguments previously brought forward against the syphilitic origin of tabes and dementia paralytica are the same, he said, as are now urged against the syphilitic origin of multiple sclerosis. Rational, carefully supervised syphilitic treatment has never aggravated multiple sclerosis but has often brought improvement.

Irradiation Over the Suprarenal Capsules in Endarteritis Obliterans

Mr. Zimmern has brought into favor in France the application of roentgen rays to the suprarenal capsules to check the physiologic mechanism of endarteritis obliterans. In collaboration with Chavany and Brunet, he has reported several cases of extensive dry gangrene in which a cure was effected or which were arrested in their evolution by radiotherapy applied to the area of the suprarenal glands. Mr. Leroy des Barres presented recently to the Academy of Medicine a case of endarteritis obliterans of the right external iliac artery, with gangrene of the leg, in which high voltage roentgen therapy applied to the suprarenal capsules brought about such a notable improvement that the amputation of the thigh could be performed at a much lower level than the appearance of the leg at first appeared to justify. Radiotherapy caused an arrest of the gangrene and then an improvement in the circulation, so that the author regretted that he had not resorted to this method earlier, believing that if he had done so the amputation could have been made at a still lower level. Mr. Zimmern himself held that suprarenal irradiation should always be carried out in endarteritis obliterans whenever there appears a menace of gangrene. In an analogous problem, that of true arterial hypertension of suprarenal origin, Mr. Santucci recommended, in an article published in the *Clinique*, the division of the left splanchnic nerve in accordance with the Pende method. This nerve, as he showed in 1903, controls the secretory functions of the suprarenals, and the splanchnic plexuses as a whole exert a vasoconstrictive action on all the vascular area of the abdomen. The division of the splanchnic nerve causes a frank and durable lowering of the arterial pressure in persons with hypertension, whereas all hypertension remedies bring about only a temporary lowering. Durante resected the greater and the lesser left splanchnic nerves in a case of juvenile gangrene due to endarteritis obliterans and in a case of generalized Raynaud's disease, both of which were associated with arterial hypertension, and obtained excellent results. After the intervention, the hypertension retrogressed steadily. Mr. Zimmern holds that high voltage roentgen therapy of the suprarenals will secure just as good results without surgical intervention.

Facial Expressions in the Blind

Mr. Dumas, professor in the Collège de France, who has specialized, as has Pierre Janet, in philosophical questions considered from the psychiatric point of view, has been carrying on research for years on the "laws" of mimicry, having extended his investigations further than Darwin. He recently presented to the Academy of Medicine the results of his research on the expression of feelings, by the mimicry of the face, in the blind. The human face, by means of spontaneous muscular phenomena, gives expression to the feelings within: the joy, sadness, fear, and the like. Inversely, persons likewise sometimes endeavor to delude an observer into believing that certain feelings are being experienced by reproducing voluntarily corresponding muscular contractions, which then take on the value of a mute language. Professor Dumas raised the question as to the origin of this mimicry; that is to say, whether it originates in the form of a remembrance of musculocutaneous sensations that have been experienced or whether it originates as a visual memory and copy of the attitudes and expressions seen in others. To determine this point, he conceived the idea of studying persons who have been blind from birth. Thirty-three observations proved to him that persons blind from birth are unable to express by mimicry feigned emotions. They had spontaneous expression, like anybody else, but they are unable to imitate such expressions; that is to say, to reproduce them without the cause that creates them. In this domain, as in many others, the blind appear able to make up for the loss of visual gifts by their accentuated tactile sense. Some of the persons studied, by applying the back of the hand to their face, produced movements corresponding to spontaneous expressions and, after some preliminary experimentation, succeeded in reproducing some elementary mimicry. It would be rendering an important service to the blind to teach them to develop forms of mimicry.

A Surgical Sound Film

Professor Gosset recently presented before the Academy of Medicine a sound film, prepared under his direction, by Mr. J. Benoit-Lévy, which opens a new path for the educational film. This film is designed to show the various stages of a surgical operation (an appendicectomy), and Mr. Gosset, for greater clarity, used the motion picture. In the first part of the film, a succession of pictures show the various stages of the operation, while one hears the voice of the professor describing them in a clear and precise manner. In the second part is presented the real operation, the various stages of which are exactly superimposable on the motion pictures previously projected. Mr. Gosset, after his presentation, explained that it had been his desire to produce a film suitable for instruction, pointing out the great interest that surgical science has in recording its various forms of technic in a permanent manner. He looked over recently, through the courtesy of the son of Dr. Doyen, the films that were taken long ago of diverse operations performed by the latter, which enabled Gosset to take account, after many years, of what was good and bad. One can judge thus of the improvement in the technic and of the progress that science has made. Such films have therefore considerable interest for preservation in the archives of the history of surgery. The audience had one criticism to offer on Mr. Gosset's film. The presentation was a little too rapid to permit them to follow all the details of the operation.

The Significance of Tuberculous Bacillemia

The presence of tubercle bacilli in the blood constitutes today a peculiar problem. A direct examination of the blood is usually negative. But the cultivation on various mediums is sometimes positive, and a positive inoculation into guinea-pigs serves as almost certain proof of the presence of the bacillus. Nevertheless, Mr. Izard and Mr. Thiry of Toulouse, by hemoculture in a Loewenstein medium or in a Petrov medium, were able to discover the bacillus only in 13.02 per cent of the observations made on twenty-three patients and fifty-one guinea-pigs, all affected with frank tuberculous lesions. The search in persons with articular rheumatism and erythema nodosum was negative, although the authors expected positive results. They concluded from these observations that bacillemia, contrary to the opinion of Loewenstein, is only a rather rare sign of tuberculosis and of little significance. Even in the forms of acute tuberculosis only a simple migration of bacilli is involved and not a massive septicemia. However, the conception of atypical tuberculosis, by supplying evidence for the filtrable form of the tuberculous virus, may possibly increase the percentage of positive cases. At the same time, J. Troisier and T. de Sanctis Monaldi carried on similar researches and reached peculiar conclusions. By using the Loewenstein medium and the Petragnani medium with asparagin but without peptone, they were more fortunate in their researches. They did not study tuberculous persons but patients affected with manifestly nontuberculous disorders: an ordinary curable pneumonia, a fatal case of streptococcia (type Osler), and suppurative cerebrospinal meningitis with meningococcus type A. They secured every time, by hemoculture, typical human bacilli, frankly virulent for the guinea-pig. Active tuberculosis, however, did not develop in one of these patients. The pneumonia patient subjected four months later to a radiologic examination was found to be cured. The patient with Osler's disease did not present at necropsy any evidence of tuberculosis. The patient with meningitis died following a new augmentation of the meningococcus type A, in spite of the specific serotherapy. In endeavoring to interpret this tuberculous bacteremia associated with a nontuberculous acute disease, the authors held that, in their patients, the acute coccal infection had brought about the appearance of the tuberculous virus that had existed until then in an almost saprophytic state in the organs. The tubercle bacillus found under these conditions in the blood cannot be considered the pathogenic agent of the acute disease but must be regarded as a virus without present pathogenic effect. To sum up, bacillemia is usually absent in frankly tuberculous patients, whereas it may be encountered in nontuberculous acute diseases without having any particular significance.

BERLIN

(From Our Regular Correspondent)

May 23, 1932.

Prospects of Medical Students in Germany

The Verband Deutscher Medizinerschaften has published notes on overcrowding in the medical profession. The following facts are emphasized: The course in medicine from the beginning of study up to the time of obtaining a license to practice comprises seven years; eleven semesters of study, one semester for examinations, and one year internship, cost the student about 10,000 marks, or $2,380, and the state contributes a like sum. Unless a physician is admitted to panel practice, a modest income is at present almost impossible in Germany. There are restrictions governing admission to panel practice; for instance, there may not be more than one physician to 600 insured persons. This proportion has already been reached; hence new admissions are made only to fill vacancies. A preliminary period of three years during which new entrants must serve as assistant physicians, which is a welcome innovation in itself, has been agreed on between the leagues of the medical organizations and the *krankenkassen*, or sick benefit associations. The number of existing assistantships is, however, inadequate for the carrying out of the agreement thus entered into. A portion of the applicants must therefore accept positions as unpaid volunteers or wait for an opening. The fees for the treatment of the insured members of sick benefit associations are exceedingly low. In addition to the medical care proper, there is considerable clerical work required by the *krankenkassen*, for which no additional compensation is granted. It is, however, almost impossible for a young physician to build up an adequate private practice that will relieve him of the necessity of accepting panel service. There are few communal, provincial and federal positions, and vacancies are rare. According to the statements of eminent investigators, the medical profession can absorb no more than from 1,100 to 1,200 oncoming physicians each year without disrupting the profession by the unduly accentuated struggle for existence. That would entail the destruction of a profession occupying a high ethical position. The new medical students enrolled for the past few years have greatly exceeded the estimated number of assimilable young physicians: 1928-1929, 3,350; 1929-1930, 3,795; 1930-1931, 4,267. It is evident that, during the past three years, 7,800 more medical students than needed have received training. The number of medical students, however, continues to increase, whereby the number of physicians without adequate income is increased by further thousands. Hence the German people is facing the growing menace of an inevitable demoralization of an overcrowded medical profession, which fact calls for prompt intervention. Action must be taken to induce those students who study medicine only for the lack of something else to do and those who in their mental and personal qualities do not rise above the average, if they even equal it, to give up their medical studies. Only the best will be capable of enduring the economic distress without departing from the ideals of the medical profession. This standpoint of the societies of the medical students, as representative of the whole body of medical students and the new medical graduates, will be readily understood; but will anything be done to bring relief? The authorities have sought in vain for a way out of the dilemma, which at the present time appears almost unsolvable. It is to be hoped that the new regulations with respect to examinations, which are being considered and are expected to be completed soon, will open up the way (or, in one sense, will block the way). Without governmental aid and controlling regulations, nothing will be accomplished; for what student is willing to admit that he is not competent, and what student is wise enough and sufficiently self-critical to recognize that he is below the average in intelligence. It is a sad thing for those of the older generation to contemplate the youth of the present day and to note the painful sacrifices that the freedom of learning must make in endeavoring to adjust itself to the times.

Municipal Radium Commissioner Appointed

In the interest of the municipal insurance system of Berlin, the mayor has appointed the chief physician of the Werner-Siemens Institute for Roentgen Research of the Städtisches Krankenhaus Moabit as a special commissioner to supervise roentgen installations, and radium and film depositories, and the electromedical installations in the municipal institutions. The mayor has requested all the municipal plants affected by the order to assist the commissioner in every way possible in his inspection and to comply with his instructions. The city hopes in this way to be able to protect itself against damage claims. Furthermore, this competent centralized supervision affords increased protection to the personnel of the installations in question.

Antisepsis in Barber Shops

Campaigns have been waged of late against insanitary conditions in barber shops, and demands have been made that police regulations be issued to control them. Now Medizinalrat Dr. Schrader has expressed his views. He points out that there is only one regulation that would eliminate all danger; namely, a regulation requiring every customer to supply his own razor, towel, brush, soap, comb, brush, shears and the like. But that is not feasible; nor are such regulations possible as would require barbers to use fresh linen for every customer, and the cleansing of all utensils after being used on a customer; for that would make the prices prohibitive. It is more important to make the barber familiar with the necessary hygienic measures and to call the attention of the public, at the same time, to existing evils. If the customer complains of insanitary practices and threatens to withdraw his patronage, the barber will usually take more care. Schrader mentions several unhygienic practices that he has found common among barbers. Some apply the back of their left thumb to their lips and draw the razor blade over the moistened surface to test the keenness of its edge. In that manner infectious diseases may be transmitted to patrons. Another practice of barbers is to use a piece of newspaper to wipe off the soap on a razor blade. In this way infectious material may be carried to a patron. Barbers' apprentices should have their attention called to the contraindications to the following procedure: In going over a customer's face the second time, barbers will often shave close after moistening the skin with clear water only. This practice gives rise to minute skin injuries, creating ports of entry for infectious organisms. Instruction in regard to these and similar unhygienic practices will accomplish more than police regulations and the imposition of fines.

ITALY

(From Our Regular Correspondent)

April 31, 1932.

Discussion on Traffic Accidents

The Società italiana di medicina sociale held recently its second national congress in Rome, under the chairmanship of Prof. Carlo Foà, director of the Istituto di fisiologia of the University of Milan. Professor Gemelli of Milan discussed the practical value of psychotechnics for the alleviation of the consequences of traffic accidents.

Professor Ciampolini, sanitary inspector of the railways, presented a paper, in collaboration with Professor Boveri, on the morbid factors in drivers of automotive vehicles that predispose to traffic accidents (emotion, excitement, irresoluteness, timidity, and the like). He considered the importance of the medical certificate as the basis of granting drivers' licenses and emphasized the need of observing candidates for licenses in all their neuropsychic manifestations, with particular reference to defects of vision and hearing.

Professor De Bernardinis, of the Ufficio centrale di statistica, gave statistics on street accidents for the period 1926-1930, which showed that the number of accidents had doubled.

Professor Cazzaniga spoke on the part played by the pedestrian in causing street accidents. Various errors are attributed to pedestrians, whereas the true cause of the accidents is usually a misunderstanding on the part of the pedestrian and the driver of each other's mutual intentions. The speed of the vehicle is not the determining factor but the condition of irremediableness in the situation. The safest pedestrian is the one who moves slowly, even though threatened in a traffic jam.

Professor Ponzo, of the University of Rome, presented a paper on the psychophysical factors that predispose to traffic accidents. The physician must endeavor to exclude all persons who are ill adapted to driving, and particularly those who, on the basis of psychotechnical research, present such defects as to justify their elimination. The examination should not be on an exclusively psychotechnical basis but should be preceded by a fundamental clinical examination of the applicant to establish the absence of pathologic factors that predispose to street accidents.

Professor Palmieri of Naples spoke on the part played by alcoholism in the causation of traffic accidents.

The Crusade Against Tuberculosis

The meeting of the Federazione per la lotta contro la tubercolosi was held at Palermo under the chairmanship of Professor Manfredi of the University of Palermo. Cannavò reported on a study of forty patients affected with pulmonary tuberculosis, for the purpose of studying the behavior of the acid-base equilibrium. In every case the degree of changes in the acid-base equilibrium is proportional to the condition of the pulmonary ventilation and to the compensation, if any, on the part of the other organs, of the deficit ascribable to the lungs.

Lucacer spoke on the prognostic value of the functional test of the reticulo-endothelial system in pulmonary tuberculosis. He recalled the proposal of Wedekind and Loewenstein to use the variable retention index of congo red in the various anatomoclinical forms of pulmonary tuberculosis, for their exact differentiation. He applied this test to some hundred tuberculous patients with results that agree with those secured by the proponents of the test. He found, namely, that the exudative types present a bad retention index (5.90 per cent of congo red is found in the blood plasma an hour after the injection), probably in relation with a certain degree of insufficiency due to an overloading of the reticulo-endothelial system, because of the reaction to the infection. He raised the question as to whether the congo red test could furnish also prognostic factors, and with that in view he continued the research. The results confirmed the correctness of his assumption. In forty infected patients, he found that with an improvement in the local and general conditions of the patient the retention index improved and approached normal values, while it became worse if the patient gave evidence of exacerbation.

Piazza spoke on a test described by him in 1923 that consisted in applying to the urine of tuberculous patients an antiserum secured by injecting old tuberculin (Koch) into a normal rabbit. The test presented two phases, one precipitant and the other lytic. The first is immediate; the second, delayed but constant, is applied by means of the biuret test. The speaker affirmed that his test is specific for pulmonary tuberculosis in febrile periods and recommended some refinements in the technic. He cited control researches that had been made by other authors; among others, those of Santoli, Bellavia, Lucacer and Franco.

Association of Stomatologists and Dentists

The general assembly of the Federazione stomatoiatrica italiana was held recently at the Policlinico di Roma, under the chairmanship of Professor Perna. The constitution of the association of the stomatologists and dentists of Italy was discussed and approved. The constitution will contain this article: "The ranks of the dentists accept without reserve or restrictions the stomatologic idea."

Malaria in the Province of Milan

Professor Piccinini, "provincial physician" of Milan, reported recently to the Comitato antimalarico (malaria commission) the present conditions in the province from the standpoint of malaria infection. The disease is at present confined to a few districts but nevertheless deserves serious consideration. During the past year, twenty-four dispensaries were established for the summer season; chemical treatment of the stagnant waters was carried out, and the topographic malaria chart of the province of Milan was completed. By statistical reports and experimental researches the importance of zootechnical development in the crusade against malaria was confirmed. A study on the relations between rice fields and anophelism was completed and revealed that well cultivated rice fields are not the cause of anophelism.

Trachoma in the Colonial Schools

In combating trachoma, which is still widespread among the native population of Tripolitania, the government operates chiefly through the colonial schools. In Tripoli there has been, since 1916, a special school for trachomatous children. The school has been recently enlarged and better equipped, in order to give to a greater number of children the preventive and curative benefits of medical treatment. At present, the enrolment comprises 597 pupils, which are divided into thirteen classes. A recent report of Professor Festa shows the results secured by this institution, which in a single year brought about the recovery of 178 children.

A Case of Alkaptonuria and Ochronosis

Prof. G. Castronuovo reported recently, to the Accademia delle scienze medico-chirurgiche in Naples, a case that he observed in which marked alkaptonuria and mild ochronosis occurred in the same patient. The cases of alkaptonuria heretofore described in the literature total not more than a hundred, and the cases of ochronosis are still more rare (less than forty). It is rare to find the two conditions in the same patient, although seventeen such cases have been reported in the literature. The patient observed by the speaker was 52 years old and had been alkaptonuric since her birth. From childhood it had been observed that her urine, although containing no sugar or blood, and which was of a clear straw color when voided, on being exposed to the air for some time turned gradually black, as if ink or coal had been mixed with it. The presence of alkaptone was confirmed by chemical tests. The speaker applied some of the urine to pieces of cartilage from a human cadaver and secured a characteristic blackening. Alkaptone, or homogentisic acid, which is derived from aromatic amino-acids, is eliminated unchanged in these patients, whereas in normal persons it is entirely burned up. In these patients, the protein metabolism is disturbed, especially in its disintegrative action, which lies at the basis of the clinical manifestations, among which attention may be called to the changes in the color of excrementa and the slow blackening of such tissues as the sclera, the cartilages, the ligaments and certain skin areas.

Meeting of the Medicosurgical Society of Pavia

The meeting of the Società medico-chirurgica of Pavia was held recently under the chairmanship of Prof. A. Ferrata. Introzzi spoke on puncture of the spleen in malignant granuloma, emphasizing its diagnostic value in the differential diagnosis of the splenomegalic varieties of malignant granuloma without involvement of the peripheral granular system encountered at necropsies. He described then the histologic picture and the appearance, in granulomatous splenomegalia, of the splenic juice obtained by means of the puncture in vivo, and brought out that the presence in it of giant mononuclear and polynuclear elements with numerous nucleoles, identifiable with the Sternberg giant cells, and the presence of elements of a histoid nature, identifiable with epithelioid cells, constituted a diagnostic factor of prime importance—superior to eosinophilia.

Callerio reported the results of his studies on lysozyme, a bacteriolytic substance first described by Fleming in 1922. He confirmed the activity and the diffusion of the lysozyme in nature, and suggested a refinement in the technic for the determination of the phenomena, which refinement consisted in testing the various substances in an emulsion of Micrococcus lysodeikticus in nutritive agar solidified in the form of thin flakes. On cultivating a number of species of bacteria in this medium, the speaker found that all developed as well as on ordinary agar, and that some strains belonging to the group of the enterococcus provoked evident phenomena of lysis similar to those produced by egg albumin and by other substances containing the lysozyme, which are manifested with the appearance of an illuminating halo around the colonies.

Rusconi studied the changes produced in the ovaries of white mice weighing from 5 to 6 Gm., following injection of the urine of a gravida, according to the method of Aschheim-Zondek. The speaker concluded that it is not a question of an early artificial maturation of the ovum but rather of a disturbance that manifests itself by endofollicular hemorrhages and changes in the miosis of the oocyte.

Bianchi spoke on Loewenstein's method for the cultivation of the tubercle bacillus in the blood. A series of control researches on the presence of the tubercle bacillus in the blood gave a negative result. Using data that he collected from the Loewenstein laboratory, the speaker explained the method followed by Loewenstein.

Death of Professor Soli

The death of Professor Soli, occupant of the chair of anatomy at the University of Palermo, is announced. Born at Milan in 1880, he was given charge, in 1922, of the instruction in pathologic anatomy at Sassari. In 1925, as a result of a competitive examination, he was assigned a chair at Bari, from which he removed to Palermo. In his studies on the thymus, he showed its importance in calcium and phosphorus exchange and established the relations of the thymus to other endocrine organs, particularly the genitalia. Other researches concerned the permeability of the placenta, the pathogenesis of tuberculosis, and the diapedesis of leukocytes through the walls of the stomach.

VIENNA

(From Our Regular Correspondent)

April 13, 1932.

The Assassination of Prof. Gustav Alexander

The profession and the public suffered a shock on hearing of the murder of the eminent otologist Prof. Gustav Alexander. An insane tailor, who, twenty-seven years ago, was operated on for a saddle nose by Alexander, then an assistant to Pollitzer in the ear clinic, had cherished feelings of vengeance toward the operator. Back in 1910 he made an attempt to kill Professor Alexander, but the attack failed and the assailant was placed in a psychopathic hospital, where he remained for twelve years. After dismissal from the hospital, he was taken home. There his paranoia developed into a delusion of persecution, under the influence of which he blamed Professor Alexander for all his misfortunes. A few days ago he returned to Vienna, lay in wait for the scientist, and killed him with five shots of his revolver as Alexander left his house.

The fame of the deceased physician was based chiefly on the fact that he introduced surgery into otology and published the results of work on the physiology and pathology of the auditory organs, which made him the leading authority in this field. His publications bear the stamp of a great scientist pointing out ways for the acquisition of new knowledge. His research gave otologists the strongest impulses toward further work. Born in 1873, he obtained his doctor's degree in 1898 and soon became assistant to Zuckerkandl in the anatomic institute, during which period he reported his striking research on the anatomy of the inner ear. He soon became first assistant in the Pollitzer clinic, and in 1907 he took over the ear department of the Policlinic as successor of Professor Urbantschitsch, which post he held until his death. He founded here an "Alexander school," which attracted physicians and students from all parts of the world. Alexander was held in high esteem by numerous physicians in America. As a specialist, he developed remarkable activity. More than 300 publications followed one another in close succession, each one a work of quality. For his researches on "The Auditory Organs of the Echidna" he received the Leuval prize, in 1904, from the otologic congress held in Bordeaux. He published articles also on "Deafness in Cretins," "The Auditory Organs of the Dancing Mouse," "Congenital Deafness," and "Lymphomatous Ear Diseases," and on the functions of the vestibule. His works on "Surgical Ear Diseases" and "Ear Diseases of Childhood," and his "Handbook of the Neurology of the Ear," published in collaboration with Marburg and Brunner, are standard authorities indispensable for the specialist and have been translated into many languages. His research on the problems of heredity, and on the perception of position in space, were interrupted by his death. In the operative technic of otology many important innovations and many cosmetic methods (ear correction) trace their origin to Alexander; the recognition of syphilitic disorders of the inner ear, operation on thrombosis of the sinus by exclusion of the jugular vein, and abscesses of the cerebellum, are inseparably connected with his name. His "Amerikaner Curs" and his operative courses were the most widely known courses in Vienna, being attended by large numbers of foreign physicians.

Death of Professor Lazar

Prof. Dr. Erwin Lazar, expounder of therapeutic pedagogy, died here recently, after a short illness, at the age of 55. The Vienna medical faculty has lost a remarkable personality. As assistant in the Vienna children's clinic, he developed the idea that backward children and juveniles who are menaced psychically by the influences of their environment require special education, in order, through correct pedagogic guidance, to become useful members of society. He devoted himself accordingly to the problem of children who are hard to train and educate, and he developed in this field masterful ideas. At the children's clinic, of which Pirquet later became the director, Lazar established and directed the department of therapeutic pedagogy, where mentally abnormal children were treated. He demonstrated that children sometimes develop criminal tendencies owing to errors in their training and education. In numerous articles, Professor Lazar discussed the treatment of mental disorders of children, and therapeutic pedagogy, and at many congresses he presented papers. His therapeutic pedagogy has been recognized as a model method of instruction. With his system it is possible, after a short period of observation, to find the correct treatment for every abnormal child, whether institutional or family care is required. In his department, a large number of foreign teachers and physicians learned the fundamental bases of the modern education of psychopathic children and are now applying his principles throughout the world.

The Profession and General Economics

At a recent session of the Gesellschaft für Volksgesundheit in Oesterreich, Professor Dr. Tandler discussed the connections between the medical profession and recent developments in economics. The fate of the physicians depends, to a great extent, on economic conditions. Physicians are so to speak contractors on a small scale. The family physician—in Europe, at least—has disappeared because mass consumption and mass production have disturbed the individual relations between the physician and the family. The physician is menaced by the same dangers as the small contractor: unemployment and lack of orders or contracts. The "individual therapy" expected of the general practitioner forces him to unload his responsibility on to the specialist, where the patient's funds are sometimes squandered. But if the practitioner takes the correct attitude, he can help his clients to economize; for he is the real administrator of the organic capital of the patient, a sort of demographic executive to whom is entrusted, to a large extent, the welfare of mankind. Professor Tandler approves the idea of placing the physicians on the same footing as the judges; for the continued existence of the physicians will not be assured until human society comes to recognize that its highest possessions—civil rights and good health—are administrative concerns of the community. He regards the present status of the physician as only a transitional stage. The future of medicine, in Professor Tandler's opinion, lies in the development of health insurance.

The Organized Crusade Against Cancer in Vienna

In the annual report for 1931 of the Public Health Service of Vienna, attention is called to the increase in cancer mortality in recent years. In 1920 the number of deaths in Vienna from malignant neoplasm was 2,400; in 1926 the number increased to 3,700 and in 1931 to 4,900. The number of deaths has therefore doubled in ten years. The cause does not lie in a progressive dissemination of the disease but rather in an improvement in the diagnosis and the greater average age of the population. The most important measure against this menace is a well organized crusade against cancer. For that purpose the municipality of Vienna has purchased 5 Gm. of radium and has established an institute for radiotherapy. In this institute, in addition to the well founded surgical treatment of cancer, the method of irradiation carefully tested in Stockholm and Paris is to be employed. All other therapeutic researches will be fostered. The systematic combating of cancer will be carried out in a manner to show the public that cancer, when diagnosed early, has a high degree of curability. When the terrible implication "incurable" has been divorced from the diagnosis of cancer, physicians will no longer hesitate to inform their patients that they have cancer. About thirty or forty years ago, the diagnosis "tuberculosis" spread much the same terror as does "cancer" today; and now, through indefatigable, organized control, it is recognized as curable. With this in view, Vienna has established consultation centers, where persons who are anxious or are actually ill can receive answers to questions from competent specialists. In positive cases, these patients are sent at once to the institute for combating cancer, where a detailed examination discloses the nature of the disease. A record card is made out for every cancer patient (even though he is being treated in some other institute), and his case is carefully followed up.

BUENOS AIRES

(From Our Regular Correspondent)

March 30, 1932.

Politics in the Medical Schools

Ever since 1918, medical students of Argentina have been enthusiastic about reforms in medical education. The reformers do not approve of the new regulations in the schools. Whenever any of the supporters of the so-called universitary reform are questioned as to its purpose, the answer differs in each case. Theoretically the following are the principal aims: (1) to give the student body certain rights in the management of the schools; (2) to develop scientific research and to intensify practical teaching; (3) to give the students a broader understanding of life in preference to professional knowledge; (4) to help free the oppressed and to carry on the social redemption of humanity; (5) to give the opportunity to teach to all of those properly fitted, and (6) to provide for professorships of six years without right of succeeding to the same position. In the schools of Rosario the students do not recognize presidents, although they have head commissioners and secretaries. The student body frequently calls strikes on various pretexts, for example, because of Sacco and Vanzetti; to request the return to the country of the communistic members who were exiled; and to show sympathy with strikes made by the working classes. As a rule, the leaders of the strikes are students of the lowest scholastic standing. Some of them have been attending the schools for ten or fifteen years. Students, with some exceptions, are only the "tools" in the hands of politicians and of some professors. As a rule, the teachers who are supporters of the reforms have both poor morals and poor knowledge. The students are registered preferably with a privat-dozent who is not strict in demanding attendance at practical work. They demand that their attendance five or ten times be accepted to cover the entire term. The last demand may explain the fact that some of the first year students, who have not finished the study of anatomy, have already finished the practical and clinical work required during the entire course of medicine. The reformists also wish that the fees for studies be completely abolished (they now pay an amount which represents only 20 per cent of the total expense to the university), they wish the examination for admission to be omitted, and they are decidedly opposed to the restriction of the number of students. This state of affairs has created an antagonism between professors and students. If the faculty does not grant the students' claims they immediately call a strike and attack the faculty; and many times the police seem to ignore it. These conditions lower the standards; the clinical work is not continuous; there is no constant contact between professors and students since the attendance is not regular; the subjects are covered in two or three months, especially the month before the examinations; the students have poor notebooks; hospitals are attended by few students, and the students live in an environment of disrespect and disorder. Many of them obtain their medical degrees without having the necessary preparation.

During the election of professors to the faculty, the students act under the influence of either bad professors or young physicians who, not having as yet a good clientele, try to obtain a chair in the faculty, a position as head of a ward hospital, or popularity to gain political positions. To obtain the votes of the students, they offer them anything. It has been said that the triumph of some candidates in some elections has been secured by bribing the students. During the elections the candidates spend large amounts of money, even 20,000 or more pesos (about $17,200); they install electoral booths in houses near the faculty; they give money to students; they rent fifty or sixty automobiles so that they can send for their student friends to vote to support the candidates. Every year there is trouble caused by this state of affairs, which compels the board of directors of the faculties, either partially or as a whole, to resign. The studies are discontinued almost every year during one or two months and then resumed. It is easy for the students to carry on with this system of violence because some of the daily papers help them. Both politicians and members of the government try to win the good will of the students, but this does not help because the students favor them only for the time they are granting their demands. It is hoped that this system may be improved on by means of better teaching given by full time professors, the continuation of research and the restriction of students by careful selection. Trips of students abroad will probably produce a favorable reaction in the student body.

Disturbances Caused by the Students

The recent changes in the personnel of the government gave origin to some student disturbances. The federations of the students requested from the government the repatriation of communistic members who are in exile; they subscribed to the red international mutual fund; they requested that the professors remain in the faculty a certain length of time, after which they should resign without any rights to be reelected; they rejected the new medical curriculum and by-laws. The principal officers of the national government received every day several commissions sent by the student body, but the members of the faculties were not summoned. However, the government approved the statutes presented by the university, indicating approval of the principles embodied and promising to present to congress new by-laws for the universities. Drs. M. R. Castex and Bonorino Udaondo presented their resignations. Dr. B. A. Houssay did not grant a postponement of his examinations and some one put a bomb in his house. The board of directors declared that every council of directors of the school should include three students with the right to vote and to participate in the management of the school. They issued a decree favoring the temporary nomination of professors without any right to be reelected, and they did not permit the new medical curriculum, which the students opposed, to take effect. Thereupon the board of directors of the faculty of medicine resigned and the vice rector of the university assumed the duty of head of the university by order of the government.

Undulant Fever in Argentina

The members of the Comisión Nacional for the study of Brucella infection in Argentina have broadened the scope of their activities in several provinces. Dr. Sordelli, president of the commission, for seven months was ill with the infection. Cases of undulant fever have been found in men in Capital Federal, Mendoza, San Luis, Córdoba, Buenos Aires, Santa Fé, Santiago del Estero, Tucumán, Catamarca, San Juan, Neuquen and Rio Negro; the largest number of cases was found in Mendoza, Capital Federal, Catamarca and San Luis. The presence of the infection was proved by clinical examination, confirmed by serum reactions and cultures. Infection in goats was discovered in isolated ranches in the provinces of Mendoza, San Juan, Córdoba, San Luis and Catamarca, in cows in Buenos Aires, Santa Fé, Entre Ríos, Corrientes, Córdoba, Catamarca, Mendoza, San Luis, Pampa and Neuquen, and in pigs and sheep in Córdoba and Buenos Aires.

Congress of Comparative Pathology Postponed

The Academia de Medicina of Buenos Aires organized a congress of comparative pathology, which was to meet at Buenos Aires during the present year. Topics to be discussed were to be Brucella infection, rabies, leishmaniasis, helminthiasis and plague. It had been decided to invite several foreign speakers. Owing, however, to the general economic crisis, a large part of those invited declined their invitations for the time being. This circumstance compelled the committee of organization of the congress to postpone the date of the congress.

BUDAPEST

(From Our Regular Correspondent)

May 10, 1932.

Medicine as a Career

At a recent meeting of the Budapest Postgraduate Association, Dr. Emile Grosz, professor of ophthalmology and president of the International Association for the Eradication of Trachoma, gave an address on medicine as a career. He said that Billroth, in a letter to a friend, whose son intended to become a physician, wrote that he should remember "that the bed of the physician is not one of rose leaves. Competition is growing and the start is difficult. The founding of a family is ever more difficult, and the pleasures of family life are very often disturbed by the practice of medicine. The pleasure of a physician is little, the gratefulness of patients rare, and more rare is the material compensation, but all these should not deter from becoming a physician one who feels the destiny in himself." Billroth added that the feeling of doing one's duties and the rejoicing at having helped others brings the physician contentment and happiness. Today, fifty years later, these words are still true. In the selection of a career, an undoubted influence is family tradition. The sons of physicians often select for their career their father's profession. In Hungary, Koranyi, Bokay, Jendrassik, Hainiss, were physician's sons. Sometimes chance influences the selection of careers. Liebermann, later professor of public hygiene, decided to select medicine as a profession when his father, on being attacked by robbers in a wood, was released because they recognized in him the good physician of the district. Billroth said that a physician, to be able to lend a helping hand to a lot of patients, must possess a fair quantity of knowledge. It is an advantage to a physician that the more he gives up of his knowledge the greater it becomes. The treasure of knowledge of physicians grows in proportion to the outlay; that is, to the help given to others.

How can a young man obtain the knowledge necessary in medical practice, having due regard to the fact that at present the profession is overcrowded and only the fittest can survive? His training starts in the secondary schools. Many lads select medicine who are not endowed with the ideas that can be procured only in the secondary schools. Another requirement is aptness. A young practitioner has to spend several years in hospitals in practical work and while in practice he has to refresh his knowledge by attending postgraduate studies at least once in two years. The Hungarian method of teaching is similar to the German: a good theoretical basis and intensive practical training. It would not be wise to weaken the theoretical education, which is a characteristic of this system; on the other hand, in the second cycle of the studies, which starts with the passing of the intermediary examinations, provision has to be made for adequate practical training as practiced in England and France.

The overcrowding in the medical profession permits raising of the standard. At the end of the first year's study, the unfit have to be strictly sorted out. This is to the interest of the young man as well as to that of the country.

In Hungary, no special examinations have to be passed by those intending to become specialists. This is wrong. At least four years of uninterrupted work in the same field, in recognized clinics or hospitals, ought to be demanded and at the end of this period there ought to be special examinations before the right to be called a specialist is obtained. Sickness insurance offices and state hospitals should employ only specialists who have a special diploma in the respective specialty.

In Hungary the number of physicians exceeds 8,000, which is too many. The situation is rendered more serious by the unfavorable distribution. There are about 4,000 physicians in Budapest alone. The remaining 4,000 are mostly in the towns and cities, while there are more than 2,000 vacancies in villages. In these small villages, physicians are unable to make even a modest living. Some of the physicians are medical officers. There are 29 county, 139 district and 147 city medical officers. In the community health insurance offices throughout the country, about 3,000 physicians are employed. Even so, several thousand physicians are dependent on private practice, which dwindles from year to year and during the economic crisis has almost entirely gone. The number of specialists has increased tremendously. In Budapest, 3,000 physicians call themselves specialists. And the universities still flood the country with new physicians. In the four universities of Hungary, the number of medical students amounts to 2,400 and the number of new graduates is more than 300 yearly. The excess of physicians is large also in other countries. In some countries, entrance to the medical career is subject to limitations; in Hungary there is the percentage normal system, which, of course, will contribute toward a decrease in the number of physicians. The long period of study, the difficulties of making money, will surely reduce the number of entrants. That this natural decrease was not noticeable up to now is due to the fact that all other careers also are overcrowded.

The livelihood of mental workers becomes more difficult from year to year. In spite of this a well trained physician will prosper even if he does not accumulate wealth. In closing, Professor Grosz said that for the disillusionment which one suffers while in practice one is repaid by the feeling of delight in being able to help mankind.

Strike in Hospital Ended

As I wrote before, about seventy young physicians of the Budapest Jewish hospital went on strike because the board of directors refused their demand for a small salary. The strike lasted for about six weeks, causing great inconvenience to the poor patients, who were never before so dependent on gratuitous treatment in the outpatient departments of the Jewish hospital. This fact had the effect that the management of the hospital felt induced to allow to the young doctors, besides full board and residence, 50 pengo (about $9) monthly salary, up to the first of November, when the question of their payment will be definitely settled. The doctors resumed their work, April 12.

Accidents with Arsphenamine Preparations

Dr. Adolf Erdos of Nagyvarad, Transilvania, at a recent meeting of the local medical club, discussed the causes, prevention and treatment of the immediate, the early, and the delayed undesired reactions associated with intensive arsenical treatment of syphilis. He emphasized that the cause may be the toxicity of the drug, caused by broken vials whose contents are oxidized, the method of application, or the intolerance of the patient, or all combined, and that the treatment should take account of the reaction to previous injections, whether the disease is recent, and whether there is any indication of a reaction on the part of the nervous system or viscera. The urine should be examined before every injection, and special caution is necessary if it contains bile pigment, albumin or much sediment. The practice of using big doses (vials containing 4.5 Gm. of neoarsphenamine intended for veterinary purposes), dissolving the whole content in water and distributing it among six to nine patients, though economical, is dangerous. The injection should always be made extremely slowly, while watching for the least untoward sign. The physician, realizing his responsibility, should keep the record of these cases written in full to date, and a solution of epinephrine and of thiosulphate should always be at hand to combat any sign of intolerance.

Marriages

CLARENCE WILLIAM PEAKE, Baltimore, to Miss Mary *Elizabeth Bouis of* Mount Washington, June 15.

SAUL KENNETH POLLOCK, Wauwautosa, Wis., to Miss Luby Myrtle Bragarnick of Milwaukee, May 22.

ANTHONY P. MURRAY, Girardville, Pa., to Miss Mary A. Noonan of Mahanoy City, June 18.

JOHN JAIRUS BERNHARD, Allentown, Pa., to Miss Hilda Susan Miller of Bangor, June 11.

JAMES O. NALL, Murray, Ky., to Miss Florence Phillips of Meridian, Miss., June 4.

RUSTIN MCINTOSH, New York, to Miss M. Millicent Carey of Baltimore, June 25.

PAUL HIGBEE, Sullivan, Ind., to Miss L. Gertrude De Vine in Chicago, May 22.

Deaths

Michael Osnato ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1906; member of the American Neurological Association, American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; clinical professor of neurology at his alma mater and professor at the New York Post-Graduate Medical School; consulting neurologist to the Central Islip (N. Y.) Hospital, Manhattan State Hospital, St. Joseph's Hospital and Columbus Hospital; director of the department of neurology, Post-Graduate Hospital; aged 45; died, June 15, in Berlin, Germany.

Norman McLeod Heggie ⊕ Jacksonville, Fla.; University of Maryland School of Medicine, Baltimore, 1902; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; oculist and aurist to St. Vincent's Hospital and the Riverside Hospital, where he died, May 9, of coronary thrombosis and arterial hypertension.

Eley Ebert Perisho, Streator, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; councillor of the second district and member of the Illinois State Medical Society; president and formerly secretary of the La Salle County Medical Society; aged 57; on the staff of St. Mary's Hospital, where he died, May 28, of septicemia.

George Keyser Angle, Albuquerque, N. M.; Bellevue Hospital Medical College, New York, 1891; member of the House of Delegates of the American Medical Association in 1910; member and past president of the New Mexico Medical Society; served during the World War; aged 65; died, May 8, of angina pectoris.

Francis Roe Benham ⊕ Syracuse, N. Y.; Syracuse University College of Medicine, 1901; formerly instructor in clinical obstetrics at his alma mater; on the staff of the Onondaga General Hospital; aged 55; died, May 28, of gastric hemorrhage, duodenal ulceration and cirrhosis of the liver.

John Parmenter, Geneva, N. Y.; University of Buffalo School of Medicine, 1883; member of the Medical Society of the State of New York and the American Surgical Association; formerly professor of clinical surgery at his alma mater; bank president; aged 70; died, June 1, of intestinal obstruction.

Byron Fuller Barker ⊕ Bath, Maine; Jefferson Medical College of Philadelphia, 1896; president of the Sagadahoc County Medical Society; fellow of the American College of Physicians; aged 59; on the staff of the Bath City Hospital; where he died, April 29, of septic peritonitis.

Winchester C. Smith, Williston, S. C.; College of Physicians and Surgeons, Baltimore, 1879; member of the South Carolina Medical Association; aged 77; died, May 28, in the University Hospital, Augusta, of chronic cholecystitis, cholelithiasis, thrombophlebitis and gangrene.

Joseph M. Tribble, Lithonia, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1895; formerly professor of the practice of medicine and diseases of children at his alma mater; at one time mayor of Lithonia; aged 67; died, May 20, in a hospital at Atlanta.

Frank Edward Dean ⊕ Bennington, Vt.; Albany (N. Y.) Medical College, 1915; president of the Bennington County Medical Society; on the staff of the Henry W. Putnam Memorial Hospital; aged 40; died, May 13, of chronic myocarditis and angina pectoris.

Chase P. Ambler ⊕ Asheville, N. C.; Western Reserve University Medical Department, Cleveland, 1889; past president of the Buncombe County Medical Society; medical director and owner of the Ambler Heights Sanitarium; aged 66; died, June 5, of pulmonary edema.

George W. Rossman, Ancram, N. Y.; Albany (N. Y.) Medical College, 1866; member of the Medical Society of the State of New York; past president of the Columbia County Medical Society; aged 91; died, June 11, in Hudson, of chronic endocarditis.

Charles Anthony Beck, Wilmington, Del.; University of Maryland School of Medicine, Baltimore, 1900; member of the Medical Society of Delaware; formerly secretary of the board of health; aged 58; died, May 19, of carcinoma of the gallbladder.

Malcolm Douglass, Jr., Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; aged 67; died, May 31, in the Temple Hospital, of cerebral hemorrhage.

John Harvey Copenhaver ⊕ Bellflower, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; on the staff of St. Joseph's Hospital, Bloomington; aged 55; died, April 26, of pyelonephritis.

Roy Earl Brown ⊕ Washington C. H., Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; past president of the Fayette County Medical Society; aged 55; died, June 1, of heart disease.

Leo Charles McDermott, Chicago; Georgetown University School of Medicine, Washington, D. C., 1913; on the staffs of the John B. Murphy Hospital and St. Joseph's Hospital; aged 43; died, May 30, in Madison, Wis., of cerebral hemorrhage.

Roger A. Smith, Goldsboro, N. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1879; member of the Medical Society of the State of North Carolina; on the staff of the Goldsboro City Hospital; aged 73; died, May 23.

James Henry Somerville, Jr. ⊕ Tuscaloosa, Ala., Medical College of Alabama, Mobile, 1906; past president and secretary of the Tuscaloosa County Medical Society; on the staff of the Druid City Hospital; aged 49; died, April 20.

Julian Birch Trotter, Rouses Point, N. Y.; University of Buffalo School of Medicine, 1927; member of the Medical Society of the State of New York; aged 31; died, May 27, of injuries received in an automobile accident.

Etta May Hadley-Judd, Lynchburg, Va.; Woman's Medical College of Pennsylvania, Philadelphia, 1895; member of the Medical Society of Virginia; aged 61; died, March 30, of injuries received in an automobile accident.

Emil Christensen ⊕ Two Rivers, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1896; on the staff of the Two Rivers Municipal Hospital; aged 62; was found dead in bed, May 26, of cerebral hemorrhage.

Cornelius J. Phillips ⊕ Chicago; Rush Medical College, Chicago; 1890; aged 73; on the staffs of the German Deaconess Hospital and St. Bernard's Hospital, where he died, June 6, of acute myocarditis and arteriosclerosis.

Jefferson Bostwick Councill, Salisbury, N. C.; College of Physicians and Surgeons, Baltimore, 1885; member of the Medical Society of the State of North Carolina; aged 76; died, April 21, of lymphosarcoma.

Russell D. Toben, Bloomfield, Iowa; Keokuk (Ia.) Medical College, 1897; member of the Iowa State Medical Society; secretary and past president of the Davis County Medical Society; aged 65; died, April 13.

Asher Tunis Applegate, Englishtown, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1869; member of the Medical Society of New Jersey; for thirty-five years mayor; aged 85; died, May 31.

David Wendell Philips, Victor, Iowa; Columbus (Ohio) Medical College, 1885; also a druggist; formerly mayor of Victor and president of the school board; aged 73; died, May 16, of cerebral hemorrhage.

James F. Kline, Anoka, Minn.; University of Minnesota College of Homeopathic Medicine, Minneapolis, 1893; aged 71; died, May 19, of carcinoma of the rectum, pneumonia and cerebral hemorrhage.

⊕ Indicates "Fellow" of the American Medical Association.

Joseph Cook Wallace ⊕ Buffalo; Hahnemann Medical College and Hospital of Philadelphia, 1903; on the staff of the Millard Fillmore Hospital; aged 53; died, April 22, of cerebral hemorrhage.

Eugene Hubbell, St. Paul; Hahnemann Medical College and Hospital, Chicago, 1883; aged 77; died, April 20, in the West Side General Hospital, of hemorrhage of the urinary bladder and uremia.

James Muir, New Buffalo, Mich.; Drake University Medical Department, Des Moines, 1897; aged 61; died, May 15, in a hospital at Benton Harbor, of injuries received in an automobile accident.

Alma Lapham Williston, Phillipsburg, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1881; aged 79; died, May 6, in the Warren Hospital, of carcinoma of the stomach.

William Lenox McWilliams, Miami, Okla.; University of Louisville (Ky.) School of Medicine, 1891; formerly mayor and postmaster of Miami; aged 66; died, April 6, of angina pectoris.

Asa Price Martin, Cullman, Ala.; Chattanooga (Tenn.) Medical College, 1897; member of the Medical Association of the State of Alabama; aged 59; died, May 27, of organic heart disease.

Charles G. Van Tilburg, Hayesville, Ohio; Cleveland Medical College, Homeopathic, 1894; formerly member of the county board of health; aged 66; died, April 20, of heart disease.

Frank Harvey Allen ⊕ Staples, Minn.; Rush Medical College, Chicago, 1894; formerly mayor and member of the board of education; aged 61; died, May 2, of organic heart disease.

Zachary Taylor Young, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1911; member of the Louisiana State Medical Society; aged 47; died, May 9.

Charles M. Chamlee, Adairsville, Ga.; University of Georgia Medical Department, Augusta, 1899; aged 57; died, May 11, in the Piedmont Hospital, Atlanta, of carcinoma of the lungs.

Arthur Bremken, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; aged 57; died, May 30, of an overdose of chloroform.

Colin A. Stewart ⊕ Bay City, Mich.; Detroit College of Medicine, 1900; on the staffs of the Bay City General Hospital and the Mercy Hospital; aged 55; died, May 1, of heart disease.

Masakichi Shinohara ⊕ Los Angeles; Okayama Medical School, Okayama, Japan, 1906; aged 48; died, May 27, in the Southern California Japanese Hospital, of cirrhosis of the liver.

Samuel L. Burton, Richmond Hill, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1900; aged 58; died, March 2, in St. Petersburg, Fla., of pneumonia.

William P. Love, Flatrock, W. Va.; College of Physicians and Surgeons, Baltimore, 1884; aged 70; died, May 10, in the Ball Memorial Hospital, Muncie, Ind., of abdominal carcinoma.

William Ruoff, San Diego, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1892; aged 63; died, May 21, in the U. S. Naval Hospital, of pulmonary tuberculosis.

William H. McKenna, Austin, Minn. (licensed by law of exemption); aged 88; died, April 26, of coronary occlusion, chronic myocarditis, bronchopneumonia and cardiac asthma.

John Wade, Baltimore; College of Physicians and Surgeons, Baltimore, 1902; aged 68; died, June 2, in Towson, Md., of bronchopneumonia, arterial hypertension and nephrectomy.

Lelon Potter Botsford ⊕ Kenmore, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1910; aged 49; died, March 21, of coronary thrombosis.

Francis N. Drake, San Diego, Calif.; Jefferson Medical College of Philadelphia, 1877; aged 81; died, April 16, of carcinoma of the bladder and strangulation of the bowels.

Frank Albert Bagley, Weston, Mo.; University of Illinois College of Medicine, Chicago, 1928; aged 29; died, May 6, in the Research Hospital, Kansas City, of heart disease.

Thomas A. Russell, Spokane, Wash.; Barnes Medical College, St. Louis, 1895; member of the Washington State Medical Association; aged 61; died, May 15, of heart disease.

Joseph Arthur Wolcott, Watertown, Mass. (licensed, Massachusetts, years of practice); medical superintendent of the Watertown Hospital; aged 76; died, May 17.

E. L. Rhodes, Lincoln, Mo.; Joplin (Mo.) Medical College, 1879; past president of the Missouri State Medical Association; bank president; aged 81; died, May 7, of senility.

Alfred Rufus Crain, New York; University of Buffalo School of Medicine, 1881; aged 75; died, May 24, at St. Luke's Hospital, of chronic nephritis and myocarditis.

Judson D. Irwin, St. Louis; Rush Medical College, Chicago, 1878; formerly coroner of St. Louis; aged 79; died, April 20, of carcinoma of the pelvic colon.

John W. Crabtree, Harrisonville, Mo.; Kansas City (Mo.) Medical College, 1896; aged 62; died, April 27, of septic infection of the bladder and chronic cystitis.

Mari Hendrik Philip Panhorst, Jonesboro, Tenn. (licensed, Tennessee, 1889); member of the Tennessee State Medical Association; aged 84; died, April 24.

William Alvin Belt, Kenton, Ohio; Medical College of Ohio, Cincinnati, 1886; member of the Ohio State Medical Association; aged 69; died, May 14.

Thomas Andrew Cravens, Colorado Springs, Colo.; Long Island College Hospital, Brooklyn, 1874; aged 84; died, May 7, of arteriosclerosis and endocarditis.

Enoch Melville Williamson, Dallas, Texas; University of Tennessee Medical Department, Nashville, Tenn., 1883; aged 74; died, May 7, of angina pectoris.

William Frederick Bester, Cleveland; Western Reserve University Medical Department, Cleveland, 1893; aged 60; died, March 1, of cerebral hemorrhage.

George Bundy, Detroit; Detroit College of Medicine, 1912; aged 64; died, May 7, in the Harper Hospital of subarachnoid hemorrhage and arteriosclerosis.

Clarence E. Hutchinson, Ocean Springs, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1905; aged 50; died, April 24.

Samuel Abrice Stout, Beavertown, Ohio; Hospital College of Medicine, Louisville, Ky., 1897; aged 65; was killed, April 26, in an automobile accident.

Frederick William Bechtold, St. Louis; Washington University School of Medicine, St. Louis, 1908; aged 48; died, May 16, of heart disease.

John S. Prettyman, Milford, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1884; aged 72; died, May 18, of heart disease.

Ernst Erstling, Centreville, Miss.; National Medical University, Chicago, 1905; veteran of the Spanish-American War; aged 65; died, April 23.

Willis H. Cole, Vicksburg, Ind.; Butler University Medical Department, Indianapolis, 1880; postmaster of Vicksburg; aged 78; died, April 29.

Baxter Staples Porter ⊕ Monroe, La.; University of Arkansas School of Medicine, Little Rock, 1928; aged 33; was shot and killed, May 30.

Phares Allen Boykin ⊕ Jeanerette, La.; University of Alabama Medical Department, Mobile, 1896; aged 58; died, April 3, of pneumonia.

John H. Phillips, Atlanta, Ga.; Baltimore Medical College, 1893; aged 65; died, April 16, in the Crawford W. Long Memorial Hospital.

James William McCray, Oklahoma City, Okla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1879; aged 76; died, April 6.

L. Emery Comstock, Horse Cave, Ky.; University of Louisville (Ky.) School of Medicine, 1907; aged 59; died, May 22, of septicemia.

Ulfert Luebben Albers, Fraser, Colo.; Denver College of Medicine, 1883; aged 72; died, March 25, in Denver, of chronic myocarditis.

Wilfred A. Nabors, Winnetka, Ill.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; aged 66; died, May 12.

Barnett Wallace, Franklin, Ind.; Jefferson Medical College of Philadelphia, 1867; aged 95; died, May 24, of chronic myocarditis.

Doc. J. Parker, Birmingham, Ala.; Memphis (Tenn.) Hospital Medical College, 1899; aged 62; died, March 27, of heart disease.

Henry Ehrhardt, Beardstown, Ill.; Missouri Medical College, St. Louis, 1877; aged 79; died, May 12, of heart disease.

Benjamin T. Hall, Benton, Ky.; Eclectic Medical Institute, Cincinnati, 1876; aged 79; died, May 27, of acute dysentery.

Bureau of Investigation

LAMBERT CHEMICAL COMPANY, INC.

The Exploiters of Phos-Phane Would Have Physicians Underwrite Their Financial Success

A number of letters have been received during the past six months from physicians who have been approached by solicitors, or alleged solicitors, for the Lambert Chemical Company, Inc., of Washington, D. C. (This company is not to be confused with the Lambert Pharmacal Company of St. Louis.) A Georgia physician wrote:

> "A representative from the Lambert Chemical Company of Washington, D. C., has just left my office, soliciting the use of a preparation known as Phos-Phane. He stated that they were making a proposition to the profession that the doctor specify this particular form, that a drug store recommended by him would stock it, and that they would then, at the end of a given time, send a check of $6.00 for a carton of the drug as used. He would also be given shares of stock in the company."

From a Florida physician came this letter:

> "Please advise if the Lambert Chemical Company, Inc., Washington, D. C., makers of Phos-Phane, is a reputable concern; if the American Medical Association has ever endorsed Phos-Phane for any particular use, and have you heard of this company's giving doctors stock in the company for endorsing their product."

From an Indiana physician came this:

> "The Lambert Chemical Company, Inc., of Washington, D. C., is putting out a product called Phos-Phane, a laxative, which the company claims is accepted by the Council of the A. M. A. A representative is going around with signed endorsement from the chemistry department of the A. M. A. Please inform me if the representations of the company are genuine and ethical."

Two telegrams from Florida physicians read, respectively:

> (1) "Dr. R. E. Bryant from Virginia here trying give physicians stock Lambert Chemical Company, District of Columbia, provided they sign note which is to be paid by druggist, who would sell Phos-Phane, which Bryant would send druggist. He has your letter endorsing his plan. Is it genuine?"
>
> (2) "Lambert Chemical Company, Washington, D. C., offering fifty dollars free stock in their company to Miami doctors prescribing their preparations. Doctors sign trade acceptance coupon, agreeing to pay for preparations. Many A. M. A. members falling for scheme."

A physician in North Carolina wrote within the last week or two:

> "I am sending the following report of my experience with the Lambert Chemical Company, Inc., of Washington, D. C., with recommendation that the company be investigated. Sometime in November, 1931, a salesman from the above company approached me in my office in regard to a product, Phos-Phane. His proposition was something to this effect: That I sign for a certain number of bottles to be placed in any drug store that I might choose and that if, at the end of a certain time, I had prescribed sufficient Phos-Phane for the entire stock to have been sold, I be given one hundred shares in the company producing Phos-Phane. If I had not prescribed sufficiently to use up the supply of Phos-Phane I was to pay the difference.
>
> "Needless to say, I refused his proposition. A short time later, I received a letter from the Lambert Chemical Company of Washington, D. C., stating that their salesman had placed an order for Phos-Phane in my name, that he was a new man, and that, although they felt sure he was to be trusted, they would like to know just how this order was obtained. My answer to this letter was that there had been no order.
>
> "May the first of this year, I received a notice from my bank that a note to Lambert Chemical Company for $96.00 was due for payment on May 16th. On investigation, this proved to be a 'Trade Acceptance' from the Lambert Chemical Company of Washington, D. C., with my signature forged. It was presented to the Citizens Bank and Trust Company of Southern Pines, N. C., through the National Metropolitan Bank of Washington, D. C."

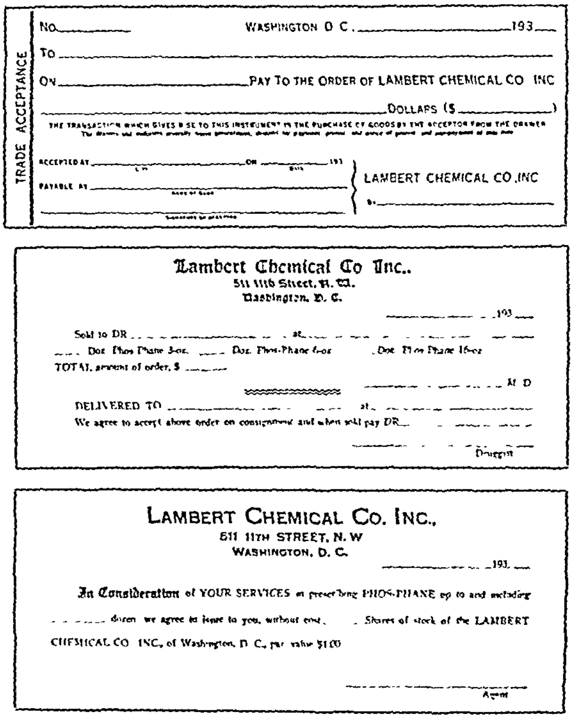
First let it be said that "Phos-Phane" has not been accepted by the Council on Pharmacy and Chemistry for "New and Nonofficial Remedies" nor, of course, has any endorsement of Phos-Phane been given by any officer or employee of the American Medical Association.

In a printed circular on Phos-Phane, the following vague information is given regarding its alleged composition:

> "It is a clear, slightly yellowish, concentrated solution of a sodium phosphate which differs from the normal phosphate and contains in suitable form a particular salt of sodium phosphate which is not precipitated by cold water."

A letter was written to the Lambert Chemical Company, Inc., by the Director of the A. M. A. Chemical Laboratory, asking for a qualitative and quantitative statement regarding the composition of Phos-Phane. The letter was addressed to the company at Washington, D. C., no street address being given, because, at that time, no street address was known. The letter was returned by the Post Office Department marked "Unclaimed" and "Not in the Directory." A month later, another letter was written to the Lambert Chemical Company, this time addressed to 1415 K Street, N. W., Washington, D. C., this address having been sent to the American Medical Association by a Washington physician. This letter also the postal authorities returned marked "Unclaimed." Two months later, a third letter was addressed to the Lambert Chemical Company, also at 1415 K Street, N. W. This time, it reached the concern, which had apparently moved to 511 Eleventh Street, N. W., Washington, D. C. The company replied that its preparation was "not secret in composition" and added:

> "It contains Disodium Phosphate U. S. P. free from effloresced salts, Phosphoric Acid U. S. P. and distilled water. The amount of Disodium Phosphate is eighty-five per cent."



TRADE ACCEPTANCE

No.________ WASHINGTON D C.________193__

TO ________

ON ________ PAY TO THE ORDER OF LAMBERT CHEMICAL CO INC

________ DOLLARS ($________)

ACCEPTED AT ________ ON ________ 193

PAYABLE AT ________

LAMBERT CHEMICAL CO. INC

By ________

Lambert Chemical Co Inc.
511 11th Street, N. W.
Washington, D. C.

________193__

Sold to DR ________ at ________

____ Doz. Phos-Phane 3-oz. ____ Doz. Phos-Phane 6-oz ____ Doz. Phos-Phane 16-oz

TOTAL amount of order, $ ________

________ M D

DELIVERED TO ________ at ________

We agree to accept above order on consignment and when sold pay DR ________

________ Druggist

LAMBERT CHEMICAL CO. INC.,
511 11TH STREET, N. W
WASHINGTON, D. C.

________193__

In Consideration of YOUR SERVICES in prescribing PHOS-PHANE up to and including ________ dozen we agree to issue to you, without cost, ____ Shares of stock of the LAMBERT CHEMICAL CO INC., of Washington, D. C., par value $1.00

________ Agent

Photographic reproduction (greatly reduced) of three blank forms used by the Lambert Chemical Company, Inc., in the sale of its preparation, Phos-Phane. The top blank, described as a "Trade Acceptance," is, as will be noted, essentially a promissory note that is to be signed by the physicians. The second blank is an agreement signed jointly by the physician and the local druggist, while the third (and lower) blank is an agreement on the part of the Lambert Chemical Company to give to the physician who has bought and prescribed Phos-Phane so many shares of stock, according to the number of dozen bottles of Phos-Phane purchased. Whether stock in the Lambert Chemical Company, Inc., has any value over and above that of the paper on which it is printed is probably a matter that only the future can decide. It would seem, however, that the Lambert Chemical Company, Inc., is playing a game of heads-I-win, tails-you-lose with the physicians.

A letter written by the Lambert Chemical Company, Inc., last August, stated that the company had the following officers and directors:

Eugene D. Crouse, Washington, D. C., President.
Dr. J. A. Rucker, Bedford, Va.
Dr. E. L. Johnson, Bedford, Va.
Dr. D. E. Remsberg, Roanoke, Va.
W. Harvey Woods, Salem, Va.
Harry F. Lambert, Lynchburg, Va.

Dr. J. A. Rucker, in answer to an inquiry put to him by the Bureau of Investigation in May of this year, replied that he was not a director nor connected in any official way with the Lambert Chemical Company and never had been, but that he does have a few shares of its stock. Doctor Rucker expressed the opinion that the company has "an excellent preparation." Dr. E. L. Johnson, who was also written to, replied that he had stock in, and is a director of, the company, and that he found "Phos-Phane is a very efficient and ethical preparation." Dr. D. E. Remsberg wrote that he was one of the directors, but stated that he had never attended any of the directors' meetings. The Lambert Chemical Company is incorporated in Delaware. The active promoter of the concern is said to be Eugene Crouse.

The company's method of doing business is made fairly clear from the letters and telegrams that have been quoted. We are reproducing in miniature with this article some of the blank forms used by the Lambert Chemical Company in getting physicians, practically, to underwrite the sale of its preparation, Phos-Phane. The most important of these forms is the "Trade Acceptance" blank. This, it will be noticed, is to be signed by the "acceptor," who is the physician. When it has been so signed, this blank becomes for all intents and purposes, a promissory note, by which the physician is buying so many bottles of Phos-Phane, agreeing to pay for them, and helping to get them placed in the local drug store on consignment.

Aside altogether from the dubiousness of the transaction from a commercial point of view, it must be quite obvious that any physician that goes into this scheme is violating one of the fundamental tenets of his profession. No medical man with a proper appreciation of his responsibilities will be financially interested in the exploitation of medicinal agents that he may be called upon to prescribe for his patients.

Correspondence

SODIUM THIOCYANATE (RHODANATE) IN NARCOTIC ADDICTION

To the Editor:—There has been disseminated, largely through the lay press, considerable publicity concerning the use of sodium rhodanate (thiocyanate), as a "cure" for drug addiction. Most of this has emanated from that branch of the department of chemistry of Cornell University under Prof. Wilder D. Bancroft. The claim is made that this drug is a dependable and efficient "cure" for morphinism and that it also exerts a favorable influence in alcoholism, acute and chronic, and in some of the psychoses.

The Tompkins County Medical Society has watched this development with considerable interest and has observed the widespread publicity given this drug to the lay press, with no little concern. It thus takes this opportunity to lay before you its opinion on some phases of this problem.

As is well known, in any inquiry regarding the value or lack of value of any therapeutic device or agent for the relief of human illness it is essential that control tests be conducted at the same time or under similar conditions as the experimental tests. These may be accomplished by utilizing nothing in the control procedures or by the use of agents that up to the time of the experiments have been known to influence favorably the given conditions. In the series of experiments with drug addicts in Ithaca, no controls of any type were used. It is well established that bromides and chloral, bromides and codeine, or codeine alone tend to lessen the intensity of the withdrawal phenomena in the treatment of drug addiction; yet these drugs were not used in control cases so as to test the relative efficacy of these compared with sodium rhodanate. It is maintained that this was a grave experimental oversight.

Sodium rhodanate has been freely used by its proponents in numerous disease states despite the fact that the pharmacology of it is, as yet, imperfectly understood. That this free administration is not without danger is attested by the fact that one out of ten patients receiving this drug died an inexplicable death. An autopsy failed to reveal any real cause for the sudden demise. The preagonal condition suggested a central origin.

As with many therapeutic innovations, the original experiment with a single case was a success. Yet the medical society has learned from the superintendent of the New York State Hospital at Willard that the test individual, a morphine addict, had been cured six times previously at that institution. Great publicity followed this single success, with many unpleasant repercussions. Regarding this incident, the Medical Society of Tompkins County, N. Y., feels that to herald to the world as a cure a substance that is apparently successful in one case is unscientific, even though this demonstrates the correctness of the hypothesis regarding its action.

That the hypothesis concerning the action of sodium rhodanate on nervous tissue colloids (Bancroft, W. D., and Rutzler, J. E., Jr.: Colloid Chemistry of Nervous Systems, *J. Phys. Chem.* **35**:1185 [May] 1931) is worthy of consideration and that the drug may have some merit, the members of the medical society would be foolish to deny. Yet the worth-while features, if any, are lost in a maze of enthusiastic claims made for this new therapeutic scheme. The society feels that this whole problem should have been approached with extreme caution and in a highly critical manner and that the usefulness or lack of value of sodium rhodanate in drug addiction should first have been demonstrated in large institutions prior to any suggestion of publicity. The tests should have been conducted by trained and experienced investigators with suitable controls, under strict supervision, and only after the study of a large series of cases over a long period of time should any publicity of any kind been given out. Of the three Ithaca investigators, Prof. W. D. Bancroft, John E. Rutzler, M.S., and Robert S. Gutsell, M.D., not one has had sufficient contact with cases of drug addiction to warrant credence being placed in their observations on this type of case.

It is of interest to state at this time that the medical society has knowledge of more than a hundred cases of drug addiction treated with sodium rhodanate without success. The investigators concerned were unanimous in their declarations that this drug had little or no effect on the withdrawal signs and symptoms and was in no sense a "cure." Regarding the use of sodium rhodanate in alcoholism, the medical society contends that no data have been brought forward to prove any favorable influence in this condition. The occasional marked depressor action of large doses of the rhodanate may prove a contraindication.

To maintain, as did Professor Bancroft before the International Narcotic Education Association in New York City, that sodium rhodanate can be used as a "cure" for drug addiction demonstrates an ignorance of the basic psychobiology of this "maladaptation." Only those who have had long experience with this type of psychologic variant are in a position to judge the possible value of a so-called cure.

The Tompkins County Medical Society of New York has approved this communication, which it submits as a protest against the intensive publicity involving the "cure" of drug addiction by means of sodium rhodanate and to report that there are numerous physicians in touch with some of the details of past experiments with the rhodanate who feel that far too much is claimed for this substance. So far as can be determined at present, there is no magic efficacy nor convincing beneficial effect of sodium rhodanate in disturbances of nervous system colloids in various disease states and the case for the drug remains to be proved.

H. B. Sutton, M.D.
N. S. Moore, M.D.
B. F. Hauenstein, M.D.
Ithaca, N. Y.

Special Narcotic Committee of the
Tompkins County Medical Society.

FRACTURE OF THE NECK OF THE FEMUR

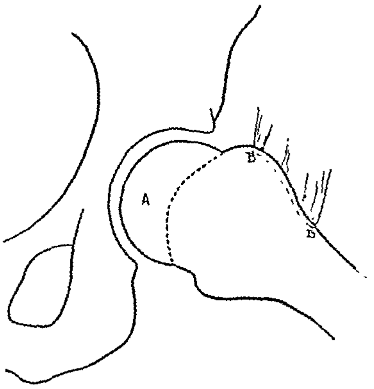
To the Editor:—I note that Dr. Magnuson, in his instructive paper on repair of ununited fracture of the neck of the femur (THE JOURNAL, May 21, p. 1791) employs what he calls the Brackett operation.

The operation is, in substance, removal of the trochanter at its base, transplanting it to the outer border of the shaft, and inserting the denuded neck into a hollowed out head. This procedure has already been described by Allison and Henderson under the same misleading title.

Brackett's operation is entirely different both in principle and in design. It was based on the proposition that the nutritive capacity of the trochanter was greater than in the neck fragment. He therefore removed the muscular attachments from the apex of the trochanter and apposed its rounded upper and inner extremity to the hollowed out head. Brackett's title was "operative transplantation of the femoral head to trochanter."

It should be evident, therefore, that one cannot perform a Brackett operation if the trochanter is transplanted to the shaft.

Dr. Magnuson contrasts the Whitman and the "Brackett" operation, as if the only distinction between the two were the removal or retention of the femoral head.



Brackett's illustrative diagram, from his second paper, for comparison with illustrations in the paper of Dr. Magnuson: *A*, head in position on upper and inner surface of trochanter; *B*, *B*, muscles reattached at lower level on shaft of femur.

The purpose of the reconstruction "Whitman" operation is to restore the capacity for locomotion. The removal of the trochanter at its base provides a new bearing surface or improvised neck, while the transplantation of the trochanter with its attached muscles to a lower level on the shaft restores voluntary control of the limb, thus justifying the title.

It was devised for a class of cases in which the destructive process was advanced and in which the neck was represented only by a shallow, irregular rim of cortical substance enclosing fibrofatty tissue.

In Dr. Magnuson's reported cases, the neck fragment is of sufficient length to permit an approximation to the head after the trochanter has been removed, which permits 45 degrees of abduction. Even in cases of this type, as in all other operations in which the result is dependent on union of the fractured surfaces, there is besides the uncertainty of repair the danger of subsequent degeneration of the cartilage and progressive arthritis deformans.

The typical reconstruction operation has the advantage that it assures to the disabled patient the capacity for weight bearing and fair control of the limb within a definite period.

Since the purpose of this communication is to correct an error in nomenclature which seems to be firmly established, I append Dr. Brackett's diagram for comparison with Dr. Magnuson's illustrations.

For those who care to verify references, it may be stated that Dr. Brackett's description of his operation was published in the *Boston Medical and Surgical Journal*, Sept. 13, 1917. A second paper on the subject appeared in the same journal, June 4, 1925. This was in substance an account of the later results in the original case. No other reports of the Brackett operation have come to my notice.

It is evident that Dr. Magnuson has never performed a Brackett operation. He has, however, presented an interesting question—whether the approximation of the neck to the hollowed out head, made practicable by the reconstruction procedure, may not be more effective in assuring union and improved function than bone grafting or spiking.

ROYAL WHITMAN, M.D., New York.

ANOTHER UNPUBLISHED BEAUMONT LETTER

To the Editor:—This letter from William Beaumont was written to his cousin, Andrew Beaumont, at that time a member of Congress from Pennsylvania. Another letter to him was published in THE JOURNAL, Aug. 22, 1925, page 632. This letter, like the previous one, was presented to the Beaumont Medical Club by André A. Beaumont of Wilkes-Barre, Pa., the grandson of Andrew Beaumont. It is deposited in the Yale University Library.

J. E. LANE, M.D., New Haven, Conn.

Mem° for my Hon. Cous.

Hold fast y^r political integrity against the combined attack of wealth, power, fraud, flattery, force or fear—the world, the flesh or the devil.

Remember y^r friend & be assured of his most cordial esteem & sincere respect for yourself and family.

Let him hear from you often—attend to his little interests at the great national metropolis and be assured of his fervent prayers for your final success in all your undertaking—moral, political, professional and scientific—domestic, agricultural and hymenial—at home and abroad—in public and private—in prosperity and adversity—may good health attend and shower its choicest blessings on your family & friends.

W. B.
8th June 1834.

GLYCINE OR GLYCOCOLL

To the Editor:—The favorable results obtained by Drs. Milhorat, Techner, and Thomas (*Proc. Soc. Exper. Biol. & Med.* **29**:609, 1932) in the treatment of progressive muscular dystrophy with glycine will undoubtedly lead to a more extensive use of this compound in therapy. It seems therefore necessary at this time to call attention to the fact that glycine, also called glycocoll, should not be confused with the photographic developer which is sold under the trade name of glycin. This compound is chemically *p*-hydroxyphenylaminoacetic acid and is distinctly poisonous.

ARMAND J. QUICK, M.D., New York.
Department of Surgical Research, Cornell
University Medical College.

THE SANITARY SURVEY OF KANSAS CITY

To the Editor:—Referring to the book review on this subject in THE JOURNAL, May 14, it seems to me that the criticism published therein is quite inconsistent with the fact that we have received second highest honorable mention in the health contest for cities with a population of between 400,000 and 500,000. I note the article states that under food control is grouped the control of rabies, which is not true, and it also states that cutting weeds is not a matter of sanitation. We regard it as such for the reason that vacant lots grown up with weeds which decay and furnish a place for dumping of insanitary matter result usually in an insanitary condition unless kept free of weeds. It is also a menace to the health of the residents in the vicinity of such places on account of hay fever and asthma, mosquito breeding, and so on.

Every branch of our service is under a separate heading, directly under the commissioner of inspections, a division of the health department, which is divided into the subdivisions of and controlled by a chief sanitary inspector and inspectors, a chief food inspector and inspectors, a chief dairy inspector and inspectors, a chief barber inspector and inspectors, a chief housing inspector and inspectors, and a veterinarian, who is in charge of the immunization of dogs. We have another division under the commissioner of child hygiene and communicable diseases, a division of hospitals and the division of records and vital statistics.

Calvin L. Cooper, M.D., Kansas City, Mo.
Director of Health.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF SYPHILIS

To the Editor:—A man, now 35 years of age, had a penile ulcer thirteen years ago. One or two intravenous treatments healed it. That was the only treatment. He married twelve years ago and now has two children, aged 6 and 8 years. To date he has "been well." Three months ago I took a blood test in a routine physical examination and found the Wassermann and the Kahn reaction four plus. Since then he has had ten intramuscular injections of mercury and ten intravenous injections of neoarsphenamine. I am now starting on a course of ten injections of sulpharsphenamine bismuth. All the time he has had mercury and iodides orally. Have you any suggestions as to future treatment? What should be done in the cases of the children, who seem healthy? Please omit name.

M.D., Ohio.

Answer.—In answering this inquiry, it will be necessary to divide it into two portions: first, the treatment of the father, and, second, the treatment of the offspring. Of course, the wife must be considered as well.

As far as the father is concerned, little evidence is furnished as to his true condition. Nothing is said as to an involvement of the cardiovascular system or as to evidence of involvement of the central nervous system. Moreover, a lumbar puncture has not been done. These details should all be gone into carefully in a patient of this sort, for only too often the four plus Wassermann and Kahn test in a patient of this type may not only indicate a positive serologic reaction but also be another evidence of a serious involvement of the cardiovascular system or of the central nervous system. Therefore, it is rather difficult to answer the correspondent as to the treatment indicated in a patient of this type. If he seems to be in good condition from the standpoint of his heart and aorta it would be advisable, having finished the course of ten injections of neoarsphenamine, to give him a course of ten intramuscular injections of a bismuth salt, as he had ten injections of mercury in the beginning. Potassium bismuth tartrate or sodium bismuth tartrate, from 0.1 to 0.2 Gm., or bismuth salicylate, 0.13 Gm., given once a week for a period of ten to twelve weeks, may be tried; this with another series of neoarsphenamine injections given once a week, each of 0.6 Gm., for a total of ten injections. If the patient stands this treatment well and if his kidneys show no evidence of irritation, we would be almost inclined to follow up this course of neoarsphenamine injections with a further course of bismuth injections intramuscularly and then again another course of neoarsphenamine injections. Throughout this therapy it would be well for the patient to take potassium iodide in 0.5 Gm. doses internally three times a day. Moreover, a serologic examination should be made at the end of each course of injections of the neoarsphenamine and of the bismuth. What further treatment would be indicated in this patient will depend much on whether he has an involvement of the central nervous system or of the cardiovascular system. In this connection, the correspondent would do well to consult Venereal Disease Information, volume 10, number 2, Feb. 20, 1929, entitled "The Management of Syphilis in General Practice."

If the children have syphilis, the mother also will be affected. It is well known that the older a syphilis is, the less danger there is of its being transmitted. This applies even when the patient has had no treatment at all. The French syphilologist Fournier was the first one to call attention to this fact. So there is a possibility that neither the mother nor the children will be affected, as the first child was born five years after the infection. The difficulty arises from the fact that he was married one year after the infection, and it would seem almost impossible for his wife not to contract syphilis, unless most stringent precautionary measures were taken for a period of years, and, naturally, if the wife contracted the disease and received no treatment, there would certainly be a good chance of the children having the disease likewise. It is easier for the disease to be transmitted by way of placental blood than it is for a case of old syphilis in a husband to be transmitted to the wife. The placental blood gives a more intimate and freer opportunity for circulating spirochetes to be transmitted to the child. We would advise that a searching physical examination be made of the wife and children, including serologic tests, lumbar puncture, and, on the mother as well, roentgen examination of the heart and the aorta. Instead of depending on one serologic test, it would be better to have two or three and insist that not only is the Wassermann test done but also one of the good precipitation tests, for example, the Kahn, Kline or Hinton test, as well. If the mother and the children are found to be affected, much the same type of treatment could be recommended as in the case of the father, though naturally the dosage employed in the children would have to be modified somewhat. If there is an involvement of the central nervous system in the case of the father, the mother or the children, naturally this is a problem in itself and could be better answered after knowing the type of involvement.

SODIUM THIOCYANATE (RHODANATE)

To the Editor:—I should appreciate it if you can tell me what sodium rhodanate is. Is it a new chemical compound? I have read a few newspaper articles on its being experimented with as a treatment for drug addicts. I am not able to find it in any textbook on chemistry or materia medica I have.

M.D., Florida.

Answer.—Sodium rhodanate is the obsolescent name for sodium thiocyanate (sulphocyanate), a drug producing actions resembling those of the iodides. Statements concerning its actions and uses may be found in standard works of reference such as Sollmann's Manual of Pharmacology, edition 4.

Publicity has recently been given to the work of Wilder D. Bancroft, professor of physical chemistry at Cornell University, and his associates, who last year reported to the National Academy of Sciences on animal experiments in which they had used sodium thiocyanate to prevent withdrawal symptoms in morphine addiction. The theory of these investigators is that the drug combats by "peptization" the "agglomerated" colloids which they hold accompany certain kinds of insanity or the use of certain drugs. Their work has not prompted any medical investigator to publish reports of confirmatory clinical trial, and according to *Science* (May 13, 1932, p. 12 of supplement) preliminary investigation by the U. S. Public Health Service has failed to confirm the claims of Bancroft and his associates.

Although the published reports of these investigators do not appear to make the claim that sodium thiocyanate is a "cure" for morphine addiction, in the *Chemical Bulletin* of the Chicago section of the American Chemical Society for May, 1932, Professor Bancroft is reported as having stated that he knew of a morphine addict who had cured himself by the use of sodium rhodanate without assistance or advice from any one else. Any one with even a moderate knowledge of the treatment of drug addicts must know that an apparent single "cure" does not constitute evidence.

RADIUM EFFECTS ON BRAIN TISSUE

To the Editor:—What is the relative susceptibility of brain tissue to radium rays? Are there any sequelae such as epilepsy, mental retardation or deficiencies known to follow radium therapy about the head? Would from three to five (with 20 mg. of radium) exposures of from one to two hours, screened in the usual way and applied to the forehead of an infant, aged 4 months, have any injurious effect on the brain?

J. H. Murray, M.D., Stronghurst, Ill.

Answer.—Normal brain tissue is quite resistant to the action of radium and roentgen rays. Cases of damage to the brain by a normal dose of radium have not been recorded; i. e., any dose that does not cause permanent damage to the skin. Sequelae from x-ray or radium treatments over the skull externally have not been noted. The correspondent does not state his dose completely (distance, filter, and area treated), but as far as can be judged he is well within the limits of any injury to the skin and would, therefore, come within the foregoing statement. The subject has been discussed by:

Williamson, C. S.; Brown, R. O., and Butler, J. W.: Effects of Radium on Normal Brain Tissue, *Surg., Gynec. & Obst.* **31**: 239 (Sept.) 1920.

Pancoast, H. K.: Treatment of Brain Tumors by Radiation, *Am. J. Roentgenol.* **9**: 42 (Jan.) 1922.

EXFOLIATIVE DERMATITIS AFTER NEOARSPHENAMINE

To the Editor:—I have a patient to whom I have given six or seven doses of neoarsphenamine. She had a four plus positive Wassermann. The only objective symptom she seems to have was an enlarged sternal end of the clavicle, and definite irregular macules, occasionally found here and there over the body. About three days after the last injection she came in with her left ear swollen, and the face and arms erythematous and scaly. The ear was so swollen that I thought of erysipelas, but she had no fever. She has grown worse; her face and arms in particular are erythematous, swollen and scaly. There are places where the superficial epidermis seems lost and serum exudes. The urine had a very faint trace of albumin at the last examination. She is in bed on a bland diet with a soothing lotion for the skin. Is this a dermatitis from the neoarsphenamine or is it something else? If it is from the neoarsphenamine, what would be the treatment?

M.D., Ohio.

Answer.—This case illustrates the need of a careful diagnosis before treatment is begun. The enlargement of the sternal end of the clavicle was probably a gumma; but the definite irregular macules here and there were probably something else and may have had some relation with the sensitiveness to neoarsphenamine. The eruption as described is a typical exfoliative dermatitis, undoubtedly from the treatment. The measures already taken are good. As the oozing ceases and the whole eruption becomes scaly, an ointment will probably be more beneficial than the lotion. Equal parts of wool fat and ointment of rose water, in which is incorporated 10 per cent boric acid, should be comforting. Sodium thiosulphate, beginning with 0.3 Gm. and increasing up to 1 Gm., should be given daily intravenously if well borne. The U. S. P. drug should be used. After the full dose has been reached, it may be given every other day. Once or several times a day the patient should be given a "colloid" bath, made by dissolving a cupful of baking soda in a tubful of water at 100 F., then adding a gauze bag in which three cupfuls of oatmeal has been boiled, stirring it about in the bath and squeezing the bag to get the fine emollient portion into the water. The water should be about 98 F. when the patient enters, and the tub should be protected as much as possible from drafts by blankets over it. The length and frequency of the bath must be regulated by its effect. At the end of the bath, the patient should be dried gently by dabbing with the towel, and the ointment should be applied at once.

Roentgen treatment, one-fourth erythema dose of soft, unfiltered rays to each part once a week, treating only a part of the body at one sitting, is beneficial. The erythrocyte count should be watched during this time. If it falls much below normal, the roentgen treatments should be stopped.

VAGINITIS IN CHILD

To the Editor:—A girl, aged 4 years, has had vaginitis of five months' duration. When I first saw her, January 15, six weeks after the onset, there was a rather abundant purulent discharge, some redness of the mucous membrane, and slight excoriation of the labia and inner surface of the thighs, in addition to frequency and burning on urination. The urinary symptoms disappeared within a week following medication. January 15 she was started on potassium permanganate irrigation, 1: 4,000, for twenty minutes twice a day. In a series of smears from the vagina, cervix and urethra, examined at the state laboratory at Houghton, Mich., gonococci were never found but pus cells have been found, in fewer numbers recently than when first taken two and one-half months ago. The child is well nourished. Her personal cleanliness is excellent. She has had no symptoms referable to the genito-urinary tract for the last two months except occasionally a drop of pus from the vagina when a douche is being given. What do you advise in treatment? Would you advise local applications of silver nitrate 10 per cent or mild silver protein 20 per cent? Are recurrences unusual? The local condition is greatly improved but her family is discouraged with the amount of progress, believing that a complete cure should have been accomplished before this. I had been of the opinion that it is often a matter of months before such a condition is markedly improved, as checked by successive smears negative for gonococci and pus cells. Please omit name.

M.D., Michigan.

Answer.—The management depends on the location of the inflammatory lesion. This is best determined by vaginoscopic examination by means of the illuminated vaginoscope or female urethroscope. Punctate lesions are sometimes discovered on the cervix or upper part of the vagina, which may be treated topically with weak solutions of silver nitrate. Skene's tubules at the base of the urethra should also be closely examined, as they may harbor the organism. If pus is expressed from Skene's tubules, irrigation with 5 per cent aqueous mercurochrome-220 soluble by means of a soft-nosed fine cannula is usually successful. Recurrences are not uncommon in vaginitis due to latent infection in the glandular structures. The fact that the smears have been negative for gonococci does not prove definitely that the infection is nonvenereal. There is a nongonorrheal variety, however, which clears up as a rule much sooner than the gonorrheal and is less likely to recur. Rarely, Trichomonas vaginalis is found in the vagina of young girls, producing the symptoms described. These are easily detected by examining the secretion in fresh hanging drop with an equal amount of physiologic solution of sodium chloride. The flagellates are then seen actively moving in the field.

The success of the therapy depends on the original cause of the infection. The vaginal instillation of 1 per cent mercurochrome ointment daily has proved successful in clearing up gonorrheal infection in about ten to twelve weeks' treatment, and the nongonorrheal infection has cleared up in an average of five weeks. It is not uncommon, however, for the course to be prolonged many months or even a year when treatment is given by means of douches. Further details may be found in an article on cervicovaginitis by Irving F. Stein, M. L. Leventhal and Harry Sered in the *American Journal of Diseases of Children* **37**:1203 (June) 1929.

BULLAE ON FEET OF DIABETIC PATIENT

To the Editor:—A man, aged 60, with diabetes mellitus, now under control, has developed a serious bulla on the dorsum of his left foot. This has healed after four weeks of rest in bed, elevation of the limb, and the use of a light cradle. The area surrounding the bulla becomes bluish when he is on his feet. The left anterior tibial artery is palpable, though not so plainly palpable as on the right side. The systolic blood pressure is 180; diastolic, 80. The urine is negative for sugar and albumin. The blood sugar is 120 mg. per hundred cubic centimetetrs. What is the prognosis for recurrence? Kindly omit name.

M.D., Wisconsin.

Answer.—The formation of such a bulla is frequently indicative of the onset of localized gangrene, although some patients will have several recurrences without a true gangrenous condition developing. From a therapeutic point of view, it is suggested that in addition to the elevation of the limb the Buerger exercises or the contrasting hot and cold local baths be instituted.

DANGER OF EXPOSURE TO X-RAYS

To the Editor:—A technician is taking roentgenograms of the extremities, the teeth and the gastro-intestinal tract. The entire duration of exposure averages five or six minutes per month. In addition to it, x-ray treatments of superficial skin lesions are given; 0.5 or 1 mm. of aluminum is used as a filter; 85 kilovolt peak is used. The entire duration of all the treatments per month averages an hour. The tube is always placed in such a manner that the rays go in a vertical direction, straight downward. During the treatments the technician is in the adjoining room; the walls are not insulated with lead. The room is well ventilated. Do you consider the secondary radiation as strong enough to cause sterility in the young girl or affect her health in any manner? Kindly omit name.

M.D., Illinois.

Answer.—There is no reason to expect any untoward action on the technician from the circumstances described. Epilation or dermatitis would be likely to occur before there would be any effect on the ovary, on the assumption, of course, that the rays are vertical and that the x-ray tube is either enclosed in a lead-glass protection bowl with the apertures directed away from the position of the technician or that the tube is of a self-protecting type. Under all circumstances it is advisable that protection for technicians be provided.

SENSITIZATION TO ARSPHENAMINE

To the Editor:—I have a syphilitic patient, aged 23 years, who had a chancre about three months ago. His Wassermann reaction was 4+. He received three intravenous injections of 0.3 Gm. of neoarsphenamine, one of 0.45 Gm. and nine of 0.6 Gm. After the third injection of 0.6 Gm. of neoarsphenamine, I gave 1 cc. solution of thiobismol, a bismuth preparation, intramuscularly for six doses, on the fifth day following each 0.6 Gm. neoarsphenamine injection. At the end of this series, the last 0.6 Gm. neoarsphenamine injection, the patient had an immediate nitritoid reaction, as evidenced by sneezing, pruritus, fulness in the head and nausea. This was relieved by 5 minims (0.3 cc.) of solution of epinephrine hydrochloride subcutaneously and two three-eighth grain (0.024 Gm.) capsules of ephedrine sulphate. The Wassermann reaction was negative at this time. Three weeks later the same reaction occurred with 0.3 Gm. of neoarsphenamine, which was relieved with epinephine hydrochloride and ephedrine sulphate. Kindly inform me how long a rest period a patient of this type should be given. Would you advise the intramuscular injections of bismuth now; if so, how many? There apparently was no improper technic in the preparation of patient, solution or administration. Kindly omit name.

M.D., New Jersey.

Answer.—The patient has in some way become sensitized to neoarsphenamine. The treatment with bismuth or mercury compounds should be continued. After a month or so, other forms of arsphenamine may be tried with great caution, arsphenamine U. S. P. or sulpharsphenamine bismuth. If these can be given, treatment with them and with bismuth or mercury compounds should be continued for at least two more full courses before a rest period longer than two weeks is given. The bismuth treatment so far has been mild. A more vigorous treatment lasting at least eight weeks and not over twelve weeks can be called a course. The chief consideration, naturally, is the continued good health of the patient, and any course of treatment has that as the aim.

LEUKOPLAKIA

To the Editor:—I have a patient about 50 years of age with leukoplakia of the tongue. I removed several large plaques, one of which was undergoing malignant degeneration. These were removed by electrocoagulation and the bases were treated with radium. The submental, sublingual and cervical glands were treated with high voltage x-rays to prevent metastasis. The areas of the large plaques are now smooth and contain no induration. There is, however, a thin uniform white coating resembling a thin leukoplakia covering the entire dorsum and sides of the tongue, excepting the few areas where the large plaques have been removed, which has been present for some years. How can this be removed? Is there any known cause to which this condition can be attributed?

C. W. Koehler, M.D., Cincinnati.

Answer.—Chronic irritation is the accepted etiologic factor in the causation of leukoplakia. Leukoplakia of the buccal mucosa is intimately associated with carious teeth, tobacco and syphilis. Further extension of existing leukoplakia in the mouth may be prevented by removing all sources of irritation. Carious teeth must be extracted, sharp edges smoothed, and incorrectly constructed dentures corrected. Smoking must be stopped and chewing tobacco prohibited. When there is evidence of syphilis, antisyphilitic treatment should be administered.

A localized area of leukoplakia may be removed by excision. Extensive areas of leukoplakia present a difficult therapeutic problem. Removal of all possible sources of irritation in most instances arrests the process and frequently improves the local condition.

X-RAY BURNS OF LIP

To the Editor:—I have a patient with x-ray burns of the lip and would appreciate literature giving the diagnosis and prognosis or general information. The burn is not very large, about the size of a pea, and barely through the skin. A machine was used with 60 cycles, 30 amperes and 5 kilowatts. Two sets of pictures were taken about two weeks apart. Please send this information as soon as possible.

E. R. Doering, D.D.S., Parkston, S. D.

Answer.—Unless a patient has had previous roentgen treatment it is unusual for a third degree x-ray ulcer to develop two weeks after one x-ray exposure. It is likewise unusual for a second degree ulcer to be so small as the one described. This naturally raises the question of diagnosis. For the protection of the operator, as well as the patient, it would be wise to have a consultation with either a dermatologist or a roentgenologist, to determine the exact nature of the disease, and the treatment would of necessity depend on the nature of the condition.

In the case of second degree radiodermatitis, soothing lotions, such as the well known calamine lotion, or a wet dressing with physiologic solution of sodium chloride should be used. In the case of third degree ulcerations, excision is the proper remedy once the condition has become localized.

A full description and bibliography may be found in MacKee's book: X-Rays and Radium Treatment of Diseases of the Skin.

MIGRAINE WITH OCULAR PRODROMALS

To the Editor:—At indefinite intervals (possibly on two or three successive days or, more frequently, at intervals of from three to six weeks) a patient has an attack beginning with slight dimness of vision, which gradually becomes more pronounced and in ten or fifteen minutes it is accompanied by scintillating zigzag lines (at the right upper side of the visual field), which continue for from fifteen to twenty minutes and then disappear, leaving the vision normal and the patient with a dull headache, which continues for about twenty-four hours. There is no vertigo, nausea or vomiting. No cause has been determined. Would you consider this a form of transient hemianopia or possibly an early sign of some organic disease? Can you suggest any treatment?

E. V. Valz, M.D., Parris Island, S. C.

Answer.—In all probability the patient is suffering from a form of migraine with ocular prodromals. The tempory dimness of vision accompanied by scintillating scotomas, either with or without contraction of the visual fields, followed by a headache of many hours' duration is quite characteristic of this condition. Local therapy or correction of errors of refraction has been entirely without avail. Some cases have responded to the systemic use of cannabis, others to phenobarbital, while in still others intestinal lavage has proved of value.

INJURY TO SPINE BY FALL

To the Editor:—In jumping from a ladder, Aug. 12, 1931, a man landed on a pipe, which rolled under his feet and caused him to fall more or less in a sitting position. Since the injury he has been unable to work on account of pain in the lumbar region. The physical examination is essentially negative. The roentgen examination is negative. The consultation diagnosis is traumatic myofascitis and the statement is made that this type of trouble is stubborn and resists all types of treatments sometimes for many months. I would appreciate any information that you may give me on the diagnosis and prognosis of this case.

W. Ellwood Tew, M.D., Bessemer, Mich.

Answer.—The diagnosis and opinion of the consultant who sees the patient is much more reliable than might be expressed by any reviewer of the question. The condition described is evidently analogous to rupture of the supraspinatus, achilles, plantaris or biceps tendons. It is impossible to make a positive diagnosis from the data supplied. The prognosis, therefore, must be guarded. The treatment may be outlined to include any or all of the following factors: rest, immobilization, support for a short period, and physical therapy consisting of radiant heat, gentle massage and diathermy cautiously applied.

AGRANULOCYTOSIS

To the Editor:—In the literature, frequent reference is made to the disease agranulocytosis. The terms leukocytosis and lymphocytosis indicate an increase in these types of cells. In the disease first mentioned there is a decrease in granulocytes, as indicated by the prefix a. It seems to me that the word is improper, with the suffix osis indicating an increase and the prefix a indicating an absence. I should like to know whether this term is correct to use. Please omit name.

M.D., California.

Answer.—The term agranulocytosis is the one most widely used to describe the condition which is also called malignant neutropenia, idiopathic neutropenia, agranulocytic angina and granulocytopenia.

The a is not a prefix. The word agranulocyte was the term originally chosen for neutrophils without granulations appearing in leukemia. Thus, agranulocytosis means an increase in these atypical neutrophils. Actually the condition is a decrease in cells of the myeloid series and sometimes an increase in lymphocytes, so that idiopathic neutropenia is probably a better name for the condition.

The term agranulocytosis and the term agranulocytic angina have become so firmly established in the literature that it is doubtful whether they can be supplanted.

POSSIBLE CAMPHOR POISONING

To the Editor:—A woman who has taken camphor dissolved in water in teaspoonful doses at frequent intervals for many years presents the blood picture of pernicious anemia, has peripheral neuritis with bilateral wrist drop and toe drop, and has considerable atrophy of the muscles and subcutaneous tissue. Considerable gastric discomfort is complained of, and pain in extremities. The onset began in December with pain in the extremities. December 10, the blood picture was normal. There is no history of metallic poisoning, jamaica ginger addiction or alcoholism. The camphor preparation she has made by dissolving the black or crude camphor in boiling water and storing for use. She is somewhat indefinite about the amounts taken, but has taken more since December, when she first fell ill. Is the camphor responsible for this condition or can it be attributed to impurities in the camphor, perhaps a benzene product which is used in the preparation of camphor commercially. Please omit name.

M.D., Massachusetts.

Answer.—The employment of camphor in the manner indicated is certainly most unusual, and probably for this reason the clinical picture described has not been noted in connection with chronic camphor poisoning. There is a possibility that the camphor might be responsible for the condition observed.

COLORIMETER FOR CLINICAL USE

To the Editor:—I should like to have some information in regard to the efficiency of the Kuttner-Leitz Micro-Colorimetetr, sold by E. Leitz, Inc., New York.

Rafael Cowley, M.D., Havana, Cuba.

Answer.—The Kuttner-Leitz Micro-Colorimeter is a satisfactory and convenient instrument for clinical use. A number of the methods have been revised since the colorimeter was first made but this has not seriously interfered with the results for clinical purposes. It is advisable to determine normal values among patients with this instrument, as the figures are apt to be a little higher than those commonly quoted. In the use of a microcolorimetric method, technic is an important consideration and the relative accuracy will depend to a large extent on the efficiency of one employing the instrument.

NOSEBLEED

To the Editor:—I have charge of an institution in which a few of the boys have nosebleed. Is there any medicine that can be given to control this condition? Squibb puts out a thromboplastin for hypodermic use. Flint, Eaton & Co. put out some kind of a preparation in fluid form to be given in tablespoonful doses. Are these preparations of value?

J. B. MAXWELL, M.D., Butlerville, Ind.

ANSWER.—There is no satisfactory evidence as to the hemostatic value of the various "thromboplastins" when they are given by mouth. Their intravenous administration is dangerous. The Council on Pharmacy and Chemistry accepts such preparations for local use only. Calcium salts, such as the lactate, have been advocated; and a trial of these may be indicated for repeated hemorrhages. Local treatment, such as pinching the nostrils so as to press the alae tight against the septum, will stop the bleeding in a large percentage of cases. Usually the bleeding spot can be seen on the septum and the bleeding stopped by cauterizing it with silver nitrate or by applying to it powdered potassium permanganate.

ORTHODONTIA

To the Editor:—At what age is it best to have a child's teeth straightened? My child at present is 9 years old and a few teeth are not straight. Please omit name.

M.D., Indiana.

ANSWER.—As a general rule, it is recommended that the correction of irregularities of the teeth be undertaken before the child is 10 years of age. In some cases much can be accomplished before the first permanent molars erupt (about the sixth year). These teeth are the key teeth, so far as irregularities are concerned. Normally these teeth should meet in such a way that the upper first molar is slightly farther back and stands farther out toward the cheek than the lower first molar; that is, the upper molar should overlap the lower to the back and to the outside. If these four teeth (one above and one below on either side) are in proper positions, they serve to maintain the relation of the upper to the lower jaw while the baby teeth are shed and the other permanent teeth erupt, and the rest of the teeth are likely to come in in their proper positions. If these molars are not in proper relation, irregularities of the other teeth are likely to occur.

If the temporary molar teeth happen to be in wrong positions, this often disturbs the position of the first permanent molars. Therefore, attention to the baby molars a few months before the permanent molars erupt is often highly important.

In cases in which it is necessary to use regulating appliances, it is probably best, as a general rule, to begin about the eighth year. The younger the child, the faster the corrections can be made, as the necessary changes in the bone about the teeth occur more rapidly.

TESTS OF PATERNITY

To the Editor:—I have somewhere seen described a test known as the Mayoral and Jiminez paternity test. In this test an emulsion in isotonic saline solution of the father's blood is injected subcutaneously into the pregnant woman's arm. An erythematous and slightly painful reaction occurs within six hours. A similar emulsion from any other man gives a negative result. Is this reaction at present accepted as definite proof of paternity in medicolegal cases?

NATHAN H. MOSS, M.D., Detroit.

ANSWER.—No, the reaction mentioned has no medicolegal standing.

TREATMENT OF SOFT CORNS

To the Editor:—In Queries and Minor Notes (THE JOURNAL, April 16) I note an answer relating to the treatment of soft corn. I should like to add that nearly all of these so-called soft corns are really plantar warts. When these lesions occur in children they may often be eradicated by applying a paste of 50 per cent salicylic acid directly over the lesion and holding it in place for a few days with a small corn pad covered by adhesive plaster. This allows a deep removal of the calloused tissue and often destroys the wart. It may be necessary to repeat this treatment immediately following the first treatment. In intractable cases, and in adults, it is necessary to follow with a destructive dose of x-rays or radium to the closely shielded lesion. Because of the location of the lesion, it is usually more convenient to employ radium than x-rays. Many of these lesions will disappear following the application to them of a crystal of monochloracetic acid the size of a small split pea. This dissolves into the corneous wart and seems to have a selective action. Trichloracetic acid will not do. The area is quite sore for a few days following this procedure. Destruction by electrodesiccation and the like is apt to cause many days of disability and is usually not desired. These lesions are autoinoculable and contagious and often appear on contiguous surfaces of adjacent toes. In very stubborn cases surgery may be considered, but, because of autoinoculation, recurrences are common. The essential in the treatment of a so-called soft corn is the consideration that pathologically it is a verrucous lesion of the plantar wart type.

HERBERT H. BAUCKUS, M.D., Buffalo.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, July 11. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: San Francisco, July 11-14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, July 12-13. *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 12. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 11-12. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

HAWAII: Honolulu, July 11-14. Sec., Dr. James A. Morgan, Room 48 Young Bldg., Honolulu.

MASSACHUSETTS: Boston, July 12-14. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

RHODE ISLAND: Providence, July 7-8. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH DAKOTA: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

WASHINGTON: *Basic Science.* Seattle, July 7-8. *Regular.* Seattle, July 11-12. Dir., Mr. Charles Maybury, Olympia.

WEST VIRGINIA: Harpers Ferry, July 12. Sec., Dr. W. T. Henshaw, State Health Dept., Charleston.

Wisconsin January Report

Dr. Robert E. Flynn, secretary, Wisconsin State Board of Medical Examiners, reports the written, oral and practical examination held at Madison, Jan. 12-14, 1932. The examination covered 19 subjects and included 100 questions. An average of 75 per cent was required to pass. Fourteen candidates were examined, 12 of whom passed and 2 failed. Fourteen candidates were licensed by reciprocity with other states. The following colleges were represented:

College PASSED	Year Grad.	Per Cent
Northwestern University Medical School	(1931)	79
University of Illinois College of Medicine	(1931)	85
University of Cincinnati College of Medicine	(1931)	76
Marquette University School of Medicine	(1931)	76, 82, 87*
University of Wisconsin Med. School	(1930)	81, 82, 85, 87, 87, 88

College FAILED	Year Grad.	Per Cent
University of Wurzburg Faculty of Medicine	(1925)	56
Osteopath †		68

College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Southern College of Medicine and Surgery, Georgia	(1914)	S. Carolina
Loyola University School of Medicine	(1931)	Illinois
Northwestern University Medical School	(1930)	Illinois
Rush Medical College	(1931)	Illinois
University of Illinois College of Medicine	(1930)	Illinois
Indiana University School [illegible]	(1916)	Indiana
University of Kansas Sch[illegible]	(1929)	Kansas
University of Minnesota [illegible]	[illegible]), (1931, 3)	Minnesota
Marquette University School of Medicine	(1928)	Ohio
University of Wisconsin Medical School	(1930)	Missouri
Osteopath ‡		Penna.

* This applicant has completed his medical course and will receive an M.D. degree on completion of an internship.

† Examined in osteopathy and surgery.

‡ Licensed to practice osteopathy and surgery.

West Virginia March Report

Dr. W. T. Henshaw, secretary, Public Health Council of West Virginia, reports the oral and written examination held at Charleston, March 22-24, 1932. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Ten candidates were examined, all of whom passed. Nine physicians were licensed by reciprocity with other states. The following colleges were represented:

College PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine	(1930)	89.6
Emory University School of Medicine	(1931)	87.4
University of Louisville School of Medicine	(1931)	85.5
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931)	84.8
University of Rochester School of Medicine	(1931)	89
Jefferson Medical College of Philadelphia	(1929)	87.8
Medical College of Virginia	(1931)	84.8
Dalhousie University Faculty of Medicine	(1924)	80.4, 83.6, (1927) 84.8

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
University of Michigan Medical School	(1928)	Michigan
Memphis Hospital Medical College	(1910)	Texas
University of Tennessee	(1928)	Tennessee
Medical College of Virg	(1930)	Virginia
University of Virginia Department of Medicine	(1926)	Minnesota
University of Manitoba Faculty of Medicine	(1924)	N. Dakota
University of Toronto Faculty of Medicine	(1923)	Penna.

Hawaii April Report

Dr. James A. Morgan, secretary, Hawaii Board of Medical Examiners, reports the written examination held at Honolulu, April 11-14, 1932. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Five candidates were examined, 4 of whom passed and 1 failed. The following colleges were represented:

College PASSED	Year Grad.	Per Cent
Stanford University School of Medicine	(1926)	82.9
Rush Medical College	(1931)	85.9
Boston University School of Medicine	(1931)	82.2
Jefferson Medical College of Philadelphia	(1929)	83.7

College FAILED	Year Grad.	Per Cent
University of St. Thomas College of Med and Surgery	(1920)	53.4

Book Notices

Female Sex Hormonology: A Review. By William P. Graves, A.B., M D , F.A.C.S , Professor of Gynecology at Harvard Medical School. Cloth. Price, $3.50. Pp. 131, with 9 illustrations. Philadelphia: W. B. Saunders Company, 1931.

Great confusion exists in the minds of most physicians, owing to the multiplicity of terms used in various publications concerning the female sex hormone. A great deal of experimental work has been done, but no uniformity has been employed in terminology by the experimenters. The glossary that the author has appended to this work alone justifies its publication. In addition, Graves, who has been an interested and active clinical investigator of preparations of the female sex hormone, has simplified the present status of this portion of endocrinology in an acceptable and easily readable form. A complete story in brief of the physiology of the female reproductive system is described in the light of our modern conception, based on a vast amount of scientific work done in the past few years. All students of medicine would profit by carefully reading this concise review of the subject, which, the author justly points out in his introduction, is not at the close but at the beginning of its great ultimate development. A complete practical bibliography and an adequate index are appended.

Selected Writings of John Hughlings Jackson. Volume II: Evolution and Dissolution of the Nervous System, Speech, Various Papers, Addresses and Lectures. Edited for the Guarantors of "Brain" by James Taylor, M.D., F.R.C.P., with the Advice and Assistance of Gordon Holmes, M.D., F.R.C.P., and F. M. R. Walshe, M.D., F.R.C.P. Cloth. Price, 25 shillings. Pp. 510. London: Hodder & Stoughton, Ltd., 1932.

A review of volume I appeared in THE JOURNAL, Dec. 26, 1931, page 1984. The present, and last, volume has three divisions: section I, 118 pages, containing addresses and papers relating principally to what Jackson called "evolution and dissolution" of the nervous system, principally dissolution; section II, 91 pages, articles relating to disorders of speech; section III, 269 pages, various papers, addresses and lectures. A full chronological list of Dr. Jackson's publications (from 1861 to 1909) and a good index close the volume. What was said of volume I may equally be said of this one: it "contains such a mass of information that detailed review is out of the question but no physician can read it without learning a multitude of things, besides enjoying a scientific banquet of neurologic knowledge."

The articles on dissolution of the nervous system present a broad base for a logical conception of diseases of the brain and cord. The author first succinctly defines evolution and then shows how disease is a corresponding dissolution, though "scarcely ever, if ever, do we meet with a case of dissolution which we can suppose to be the exact opposite of evolution." He here presents his oft-repeated thesis: "I submit that disease only produces negative mental symptoms answering to the dissolution, and that all elaborate positive mental symptoms (illusions, hallucinations, delusions and extravagant conduct) are the outcome of activity of nervous elements untouched by any pathological process; that they arise during activity on the lower level of evolution remaining."

It must be a comprehensive philosophy of scientific pathology that enables one rationally to compare insanity, hemiplegia and progressive muscular atrophy. This Jackson does with admirable lucidity. Not only psychiatrists and neurologists but also, perhaps especially, psychoanalysts will find these chapters a mine of rare richness. Dr. Jackson's exposition of the relations of consciousness, voluntary movement, convulsion and paralysis is an extraordinary example of fecund philosophical thinking—with practical application.

Of section II, naturally a good bit is chiefly of historical value; but the combination of skilful clinical neurology, practical psychology, meticulous observation and philosophic generalization at the command of a man writing sixty-six years ago is truly amazing. A few disjointed quotations may be indicative. "To locate the damage which destroys speech and to locate speech are two different things." "Speaking is not merely the utterance of words." "Speaking is propositionizing." "We must not classify on a mixed method of anatomy, physiology and psychology any more than we should classify plants on a mixed natural and empirical method, as exogens, kitchen herbs, graminaceae and shrubs." "Can an aphasic make a will? cannot be answered any more than the question 'Will a piece of string reach across this room?'" "We must not say that the 'memory of words' is a *function* of any part of the nervous system." "There is no 'power' or 'faculty' of speech apart from words revived or revivable in propositions. . . ." "We must study subjects so complex as this empirically before we study them scientifically." "We must be very careful how we use the word 'cause' with regard to disease and symptoms. We must never speak of distructive lesions causing positive symptoms." In explaining the difference between "external" and "internal" speech, Dr. Jackson uses the rather startling but apt illustration of the state of a deaf mute (who talks with his fingers), losing both arms by amputation.

Section III shows Jackson's versatility. Lack of space precludes going into details. The address on the psychology of joking in a pleasing way exhibits the author's mental agility. While abounding in wit and humor, it shows the same keen insight, the same striking comparisons, the same inductive reasoning characteristic of his apparently more serious papers.

The oration on ophthalmology in its relation to general medicine (1877) would be a credit to any living physician. Indeed, no one comes to mind who could even now do the job so well. The paper on the diagnosis and treatment of diseases of the brain contains an amazing wealth of erudition, of stimulating suggestions and profound reasoning. It was delivered forty-four years ago, and no neurologist of today can read it without enriching his mental equipment.

Over against thousands who can acquire great stores of knowledge, rare scores learn to think. John Hughlings Jackson was a prince in this smaller company. He was more: a seer, a prophet, a voice crying in the wilderness; a pioneer, scientific reformer, an earnest, totally unselfish preacher; a persistent seeker for and broadcaster of truth. But in all justice it must be added that Jackson did not write for him who wishes to run as he reads nor for such as—to paraphrase a late beloved colleague—start their eyes to reading and then go off and leave them.

That every reference medical library will have these volumes is a foregone conclusion. That all thoughtful neurologists and psychiatrists will possess and read them is devoutly to be hoped. The medical historian cannot ignore them.

How's Your Blood Pressure? By Clarence L. Andrews, M.D., Attending Physician and Medical Chief at the Atlantic City Hospital. Cloth. Price, $2.50. Pp. 225. New York: Macmillan Company, 1931.

This is an outline of the more common and salient features of blood pressure, normal and abnormal, written in a style that should appeal to the lay reader. The book covers the relation of food, work, worry, heredity, sex and exercise to blood pressure. The chapter on the physiology of the circulation is a bit too complicated for the average person to grasp, and the chapter on the methods of estimating blood pressure might well have been omitted.

Neoplastogenesi: Di una soluzione veramente integrale del secolare problema riguardante l'origine dei tumori. Per Dott. Enrico Gilardoni. Paper. Price, 5 lire. Pp. 91. Rome: Edizioni Sapientia, 1930.

Prof. P. N. Gregoraci of the University of Naples announced in 1925 that all new growths, whether in man, lower animals or plants, owed their genesis to symbiosis between certain micro-organisms and the cells of the host. In man, according to the theory, the spirochete of syphilis accounts for the origin of 75 per cent of cancers, while the tubercle bacillus, the malaria parasite and the gonococcus are the exciting agents for the remainder. The author of the present treatise, inspired by the originator of the doctrine, as well as, according to a foreword, by the death of his mother from a malignant tumor, lays before the world his exposition of the thesis embellished with emotional excursions as uncritical as they are warm.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: General Medicine. Edited by George H. Weaver, M.D.; Lawrason Brown, M.D.; George R. Minot, M.D., S.D.; William B. Castle, M.D.; William D Stroud, M D., and Ralph C. Brown, M.D. Series 1931. Cloth. Price, $3. Pp. 814, with 24 illustrations. Chicago: Year Book Publishers, Inc., 1931.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Dermatology and Syphilis. Edited by Fred Wise, M.D., Professor of Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital of Columbia University, and Marion B. Sulzberger, M.D., Associate in Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital of Columbia University. Urology. Edited by John H. Cunningham, M.D., Associate in Genito-Urinary Surgery, Harvard University Post-Graduate School of Medicine. Series 1931. Cloth. Price, $2.25. Pp. 472, with illustrations. Chicago: Year Book Publishers, Inc., 1932.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: General Therapeutics. Edited by Bernard Fantus, M.S., M.D., Professor of Therapeutics, University of Illinois College of Medicine, and Louis B. Kartoon, B.S., M.D., Instructor of Medicine, University of Illinois College of Medicine. Series 1931. Cloth. Price, $2.25. Pp. 467, with 53 illustrations. Chicago: Year Book Publishers, Inc., 1932.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Obstetrics. Edited by Joseph B. DeLee, A.M., M.D., Professor of Obstetrics, University of Chicago Medical School. Gynecology. Edited by J. P. Greenhill, B.S., M.D., F.A.C.S., Attending Gynecologist, Cook County Hospital. Series 1931. Cloth. Price, $2.50. Pp. 665, with 44 illustrations. Chicago: Year Book Publishers, Inc., 1932.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Pediatrics. Edited by Isaac A. Abt, M.D., Professor of Pediatrics, Northwestern University Medical School with the collaboration of Arthur F. Abt, M.D., Assistant in Pediatrics, Northwestern University Medical School. Series 1931. Cloth. Price, $2.25. Pp. 569, with 37 illustrations. Chicago: Year Book Publishers, Inc., 1932.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: The Eye. Edited by E. V. L. Brown, M.D., Professor of Ophthalmology, University of Chicago, and Louis Bothman, M.D., Associate Professor of Ophthalmology, University of Chicago. The Ear, Nose and Throat. Edited by George E. Shambaugh, M.D., Professor of Otology, Rhinology and Laryngology, Rush Medical College of the University of Chicago, and Elmer W. Hagens, M.D., Instructor in Otology, Rhinology and Laryngology, Rush Medical College of the University of Chicago. Series 1931. Cloth. Price, $2.50. Pp. 629, with 20 illustrations. Chicago: Year Book Publishers, Inc., 1932.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: General Surgery. Edited by Evarts A. Graham, A.B., M.D., Professor of Surgery, Washington University School of Medicine. Series 1931. Cloth. Price, $3. Pp. 804, with illustrations. Chicago: Year Book Publishers, Inc., 1932.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Neurology. Edited by Peter Bassoe, M.D., Clinical Professor of Neurology, Rush Medical College of the University of Chicago. Psychiatry. Edited by Franklin G. Ebaugh, A.B., M.D., Professor of Psychiatry, University of Colorado Medical School. Series 1931. Cloth. Price, $2.25. Pp. 471, with 28 illustrations. Chicago: Year Book Publishers, Inc., 1932.

This series, printed over many years, shows a new trend for 1931 and 1932. Instead of being a haphazard collection of abstracts, it now presents the literature in various fields with critical comments by the editors on the abstracts that they consider worthy of publication.

In the field of medicine, the six editors have taken this responsibility seriously, and their comments are invariably enlightening. Special sections on undulant fever, tularemia and psittacosis indicate the timeliness of the material. It is felt that the use of vaccines in whooping cough is still an open question, that convalescent serum for the prevention of measles is an established measure, that diphtheria toxoid is gradually replacing toxin-antitoxin for diphtheria, and that rabies may be eliminated by strict enforcement of the muzzling laws. The reports on the use of stramonium in encephalitis are encouraging. Family physicians are urged to assume their responsibility in vaccination against smallpox, since there are still 50,000 cases of smallpox annually in this country. The discussion of colds by Lawrason Brown reveals the failure thus far to control this most common of diseases. The mucin treatment of gastric ulcer and duodenal ulcer is given consideration, and the editor does not feel that it presents any considerable improvement over the Sippy technic. There is beginning to be a reasonable classification of blood dyscrasias with the development of new information from various clinics.

In the book on surgery, now edited by Evarts A. Graham, special attention is paid to thrombosis and embolism, the maggot treatment of osteomyelitis, the rate of healing of wounds, spinal anesthesia and phrenicectomy. This volume is marked not only by numerous thoughtful editorial comments but also by the excellence of the abstracts.

The volume on therapeutics, by Fantus and Kartoon, summarizes the literature made available during the year and is full of practical hints for everyday use in the practice of medicine. The classification of the therapeutic technics is unusual and is concerned with physiologic actions rather than with materia medica.

The volume on neurology and psychiatry brings its subject quite down to date and reveals a conservative attitude toward psychoanalysis. Thus, in criticizing an article on psychoanalysis and eye disturbances, Dr. Ebaugh says: "Psychoanalysis is open to the criticism of not being objective and scientific on the basis of articles of this type which are unrelated to case material." No doubt the psychoanalysts have introduced into medicine more imagination and theory than has been brought into the field in any other branch of medical study.

The volumes on the various specialties are limited largely to abstracts of new contributions to the field concerned and thus supply new material rather than complete reviews. Apparently evidence is beginning to be developed to support Noguchi's conception of the cause of trachoma. There continues to be considerable argument as to just when a dead tooth should or should not be removed.

The volume on pediatrics opens with an excellent outline of the social position of pediatrics by Dr. Isaac A. Abt. It includes considerations of progress in every field of medicine, since pediatrics must be, after all, a complete consideration of medicine as applied to the child.

The volume on obstetrics continues to present the views of DeLee and his school in the usual satisfactory manner.

The volume on dermatology and syphilis appears with two new editors, who point out that they have chosen their material largely with the general practitioner in mind. The abstracts are extensive, in fact so extensive that they may indicate the lack of experience of the authors in selecting exclusively significant material.

Opuscula selecta Neerlandicorum de arte medica. Fasciculus decimus quem curatores miscellaneorum quae vocantur Nederlandsch Tijdschrift voor Geneeskunde collegerunt et ediderunt Amstelodami Sumptibus Societatis. [An Account of the Diseases, Natural History and Medicines of the East Indies. Translated from the Latin of James Bontius]. *Cloth. Pp. 459,* with illustrations. Amsterdam: Sumptibus Societatis, 1931.

This volume in the series of reprints of Dutch medical works, published by the *Nederlandsch Tijdschrift voor Geneeskunde,* contains the writings of Bontius on tropical medicine and natural history. M. A. Van Andel writes an interesting introduction about Bontius and his career, with bibliographic and other details. Jacobus or James Bontius, 1592-1631, became doctor of medicine in 1614 and practiced in Leyden ("plague-doctor" in 1624-1625) until he was appointed doctor, apothecary and surgical inspector in the Dutch East Indies in 1626. He arrived in Batavia in September, 1627, and died, Nov. 30, 1631. During this brief but strenuous period he made for the first time "a more or less methodic survey of the principal diseases to be found in the Indian Archipelagio" and wrote in Latin an account of his medical studies as well as of botanic and zoological observations. This work is now reproduced in Latin text with English translation. In 1769 the first four books were published in London under the title "An Account of the Diseases, Natural-History and Medicines of the East Indies. Translated from the Latin of James Bontius, Physician to the Dutch Settlement at Batavia." This translation, which is evidence of the importance attached to the work at that time, is used in the volume under consideration; books 5 and 6, which deal with animals, plants and spices, have been translated by A. Quiredo. The third and fourth books constitute a pioneer work on tropical medicine. The first chapter of the third book gives perhaps the earliest detailed description of beriberi. Dysentery—from which Bontius himself was a sufferer and which he regarded as infectious in nature—consumption, cholera, empyema, jaundice, abscess of the liver are some of the other topics considered. In all cases, directions for treatment are given. In connection with empyema and abscess of the liver, precise surgical treatment is described. Frambesia is described clearly and as resembling the "venereal disease" but differing in being produced "without any venereal embrace." Book 4 is entitled "some select observations taken from the dissection of dead bodies, and tending to throw light on the diseases above [book 3] treated of." Here are described concisely postmortem observations on meningitis, empyema, fracture of the skull, "a chronic and complicated disorder," on a man "in whom the vena cava was filled with a fat and medullary substance," abscess of the liver ("on opening the body, we found nothing of the liver but the membrane surrounding it, pretty thick like a sack, in which was still a little sanious matter resembling the water wherein flesh had been washed, and such as he had spit up for a long time"), on a person who died of a wound in the breast, etc. The last was obviously a medicolegal necropsy because of the statement "we opened the body in the presence of the magistrate." These records clearly establish Bontius as a pioneer student of morbid anatomy in the tropics. Under handicaps and difficulties of which we can form no adequate idea, Bontius in less than four years carried on a work the results of which place him among the founders of tropical medicine. He is an honor to Dutch medicine and abundantly entitled to the great distinction of the reissue in new form of his works three hundred years after his death.

The Sexual Side of Marriage. By M. J. Exner, M.D., Consultant of the Division of Educational Measures, the American Social Hygiene Association. Cloth. Price, $2.50. Pp. 252. New York: W. W. Norton & Company, Inc., 1932.

This or a similar book might well be in the possession of every couple contemplating marriage or having any sort of difficulty in making such sexual adjustments as may be essential to a well balanced and satisfying marital life. The book is well written. It is interesting without being in the least morbidly stimulating. It is easily understood without being in the least juvenile. It is scientific. The author has succeeded in doing well a task that has rarely been accomplished. The subject matter is treated in a straightforward manner and in language that leaves little to the imagination. Proper attention has been given to the emotional side of sex life and, indeed, the whole book is on a high mental, emotional and moral plane. The book is recommended to the physician who wants a book that may be trusted in the hands of his young people or of older couples with sexual maladjustments.

Arbeiten aus der dritten Abteilung des Anatomischen Institutes der Kaiserlichen Universität Kyoto. Herausgegeben von Prof. Dr. Seigo Funaoka, Vorstand der Abteilung. Serie C: Experimentelle Tuberkuloseforschung, Heft 2. Paper. Pp. 108, with illustrations. Kyoto: Anatomical Institute of Kyoto Imperial University, 1931.

The papers collected in this publication form the experimental justification for the treatment of tuberculous patients with "yatoconin." Funaoka and his school found a phosphatase and a pyrophosphatase in tuberculous tissue; they show that it is identical with the phosphatase that Robison discovered in ossifying cartilage. If a rabbit, infected with human tubercle bacilli, is given an intravenous injection of calcium diethyl phosphate, the phosphatase causes deposition of calcium phosphate in the tuberculous lesions. Injections of calcium levulose monophosphate ("yatoconin") were given to eighty patients with enlarged cervical lymph nodes. In from 8 to 12 per cent of the cases the nodes remained stationary; the remainder showed varying degrees of improvement after from fifteen to thirty injections. Good results are claimed for this treatment, even when it does not result in calcification. Funaoka expects to publish a third volume, which will give more clinical data. No opinion can be formed of the value of this treatment at the present moment.

Intracranial Tumors: Their Pathology, Symptomatology, Diagnosis and Prognosis. By Cyril B. Courville, M.D., Resident Neurologist, Los Angeles County General Hospital, Los Angeles, California. Fiske Fund Prize Essay, No. LXIV. Cloth. Price, $2.50. Pp. 158, with 33 illustrations. *Providence:* Fiske Fund Essay, 1931.

This little book, the Fiske Fund prize essay for 1929, is a rather elementary discussion of the subject. Part II, concerning the pathology of brain tumors, is a summary of recent American work, accurate in the main, although those who do not agree that neuroblasts play any part in the development of the tumor ordinarily known as spongioblastoma or glioblastoma multiforme would object to the coinage of a new term for this tumor. Part III, concerning the symptomatology of tumor of the brain, is original in that the author discusses single symptoms rather than the symptomatology of the regions of the brain, as is usually done. He is not consistent, however, for along toward the end of this part he discusses the symptomatology of the cerebellum as a whole rather than individual symptoms which may or may not arise from the lesions of the cerebellum. In part IV, concerning the diagnosis of brain tumor, the discussion of differential diagnosis is inadequate, and so also is part V, concerning the prognosis of brain tumors. Although the discussion is in the main accurate, and should be useful for students to read, the volume cannot be recommended as an adequate textbook on the subject.

Les urétrites chroniques: Diagnostic et traitement. Par R. Dossot, chef de Clinique Urologique à l'Hôpital Necker, et M. Palazzoli. Préface du Professeur Legueu. Paper. Price, 50 francs. Pp. 344, with 37 illustrations. Paris: Masson & Cie, 1932.

This book deals with one of the most troublesome chapters of urology, the care of chronic urethritis. The normal and pathologic anatomy of the urethra and its appendages is minutely gone into and on this exposition is based a rational diagnostic procedure. Particular stress is laid on the ocular inspection, and excellent colored plates illustrate the achievements of urethroscopy. The therapeutic part of this publication is complete according to the most modern standard. It is satisfactory to notice that the pertinent world literature is thoroughly considered. This monograph compares favorably with all the other publications dealing with these disorders.

A History of Smoking. By Count Corti. Translated by Paul England. Cloth. Price, $3.50. Pp. 296, with 64 illustrations. New York: Harcourt, Brace & Company, 1932.

Long before civilized man began to sacrifice at the altar of Madame Nicotine, smoke had been used by the Mayas and by various savages in their religious customs. Then Columbus discovered America, and white men had opportunity to observe Indian customs. The great Oviedo wrote, after observing smoking by the Indians, "I cannot imagine what pleasure they derive from this practice unless it be the drinking which invariably precedes the smoking." Count Corti traces the evolution of smoking from that time to the present day, calling attention particularly to the way in which it has influenced modern history. It has started social, economic and political revolutions and made many a martyr. The book by Count Corti is concerned wholly with these aspects of the subject and does not primarily concern its relationship to health. There were, of course, numerous occasions in which the battles which raged on the subject were given a health slant, but in most instances without any scientific evidence to support the arguments of the fanatics who defended either side of the subject.

Le spine bifide (Malformazioni congenite de fessure vertebrali). Per Prof. G. Jemma, libero docente e assistente di clinica ortopedica nella R. Università di Napoli. Paper. Price, 30 lire. Pp. 224, with 57 illustrations. Naples: La Pediatria, 1930.

Proceeding from definition, through historical considerations, embryology, morbid anatomy, etiopathogenesis, symptomatology, diagnosis, therapy and sequelae, the author gives a well rounded, objective presentation of the congenital malformations associated with fissures of the vertebrae. Personal observations on sixty-five patients are reported in detail, accompanied by numerous reproductions of photographs, drawings and charts. Although presenting little that is startling, the work is of value as a summary in the Italian language of the information to date. The bibliography is exhaustive.

Medicolegal

Quarantine of Patient Having Venereal Disease

(Ex parte Lewis (Mo.), 42 S. W. (2d) 21)

A St. Louis ordinance provides that every person arrested as a prostitute, keeper, inmate or frequenter of a house of ill fame be examined by a physician of the division of health. If the person examined is found to have a venereal disease in an infectious stage, he or she must be quarantined in the city hospital until no longer capable of spreading the disease. A woman arrested as an inmate of a house of prostitution was examined, found to be afflicted with syphilis and gonorrhea, and quarantined in the city hospital. She petitioned for a writ of habeas corpus to obtain her release. The parties to the suit agreed that the petitioner was lawfully quarantined if the ordinance under which she was confined was valid, and the only question before the court was therefore the validity of the ordinance.

No claim was made that the city did not have authority to legislate on the subject matter of the ordinance, but the petitioner contended that the ordinance violated the due process clauses of the federal and state constitutions. Laws and ordinances, said the Supreme Court of Missouri, prescribing regulations for the promotion of health and welfare are within the police power of the government and, if reasonable, they are not obnoxious to the due process clause of either the federal or the state constitution. This ordinance was adopted to protect and promote the health of the people. Being fairly within the police power of the city, it was held by the court to be not in violation of the constitutional provisions invoked by the petitioner.

The petitioner further contended that the ordinance was invalid because in violation of section 1 of article 6 of the constitution of Missouri, which prohibits the conferring of judicial power on an administrative officer. Apparently the petitioner contended that this ordinance undertook to confer judicial power on an administrative officer when it undertook to vest in the health officer power to determine whether or not a person arrested should be subjected to isolation and treatment. But, said the court, a power is not necessarily judicial within the meaning of the constitutional prohibition merely because the exercise of that power requires an investigation of the facts and the exercise of judgment within lines prescribed by the law which confers the power. This ordinance authorizes the health officer to determine whether or not a prisoner has a venereal disease in an infectious stage. Such authority empowers the health officer only to determine the facts on which the ordinance by its own terms operates. The determination of such facts is not the exercise of either legislative, executive or judicial power within the meaning of the constitution.

The petitioner finally contended that the ordinance violated the prohibition of the state constitution that provides that no person shall be prosecuted criminally otherwise than by indictment or information. Obviously, said the court, there is no merit in this contention, for the petitioner was not prosecuted on any charge. Isolation is neither a prosecution nor a punishment for the commission of a felony or misdemeanor.

The petition for a writ of habeas corpus was dismissed and the petitioner remanded to the custody of the superintendent of the city hospital.

Legal Test as to Charitable Character of Hospital

(William Budge Memorial Hospital v. Maughan, County Treasurer (Utah), 3 P. (2d) 258)

The William Budge Memorial Hospital claimed that its property was used exclusively for charitable purposes and by the provisions of the constitution of Utah was exempt from taxation. It procured an injunction restraining the treasurer of the county in which it was located from collecting taxes for the year 1928, which had been assessed on the real estate and buildings owned and occupied by the hospital. The county treasurer then appealed to the Supreme Court of Utah.

The test, said the Supreme Court, which determines whether a hospital is charitable or otherwise is its purpose; that is, whether or not it is maintained for gain, profit or advantage. 30 Corpus Juris 462. Here, the hospital was incorporated under the general incorporation laws of the state as a corporation organized for profit, with an authorized capital stock of $35,000, which later was increased to $50,000. The charges made for services were the standard hospital charges. No patient had ever been received against whom no charge was entered on the books of the hospital, except members of the hospital staff and their immediate families. The hospital, in 1927, had an undivided profit of $31,000 and had paid the debt incurred in constructing and equipping the main building. Considering these facts, said the court, the conclusion seems inescapable that the hospital is an enterprise for pecuniary profit and its property is not exempt from taxation.

The hospital contended, however, that it was never carried on for pecuniary profit, since no dividends were ever declared or paid. The fact, said the court, that the managing directors of the hospital deemed it advisable to permit its earnings to accumulate and to use such accumulations for additional buildings and equipment, rather than to pay them out as dividends, is not indicative of either a benevolent or a charitable purpose. It often is in line with sound business principles to withhold dividends and to convert the money into increased facilities. Certainly, every stockholder is pecuniarily benefited. His holdings in the corporation are enhanced in value. A management following such a policy might, in the course of years, after the plant had increased in value because it was not burdened by the payment of taxes, be able to dissolve the corporation to the profit of all the stockholders. Furthermore, the stockholders might at any time invoke the court against arbitrary and unreasonable conduct on the part of the board of directors in accumulating a surplus in violation of their rights to the profits of the corporation. There is not a single feature, said the court, marking the plaintiff as a charitable institution.

The judgment of the trial court enjoining the county treasurer from collecting the taxes was reversed.

Revocation of Physician's License; Ground for Revocation May Be Stated in General Terms.—"The rule obtaining in the majority of the jurisdictions which have passed on the question is that a statute providing that the license of a physician, surgeon, or dentist may be revoked by the officers or board by which such licenses are granted, is not rendered uncertain or otherwise invalid because the grounds for revocation are therein stated in general terms." 5 A. L. R., 94. "As there is no real distinction between refusing and revoking a license, the same body which may be vested with power to grant or refuse to grant a license may also be vested with the power to revoke it. . . . The board is not bound by the ordinary rules of procedure or evidence that apply in a court of law or equity. Even though there is given no right of appeal from the decision of the administrative board, the federal constitution is not violated, for the right of appeal is not essential to due process of law." 21 R. C. L. 366. A statute authorizing the board of health of the territory of Hawaii to revoke a physician's license because of "gross carelessness and manifest incapacity" is not unconstitutional. To charge a physician with "professional misconduct and gross carelessness and/or manifest incapacity as a physician" gives him due notice of the charge that he is called on to defend. There is vast difference between "unprofessional and dishonorable conduct," a phrase sometimes found in statutes of this nature, and the term "gross carelessness and manifest incapacity." The former relates to professional ethics and the personal conduct of the physician, while the latter relates to the physician's method of treatment and the degree of care exercised in the treatment of the patient, and to the physician's skill or capacity properly to diagnose and treat such patient—terms that seem to have a well defined meaning both in law and in the medical profession.—*Yoshizawa v. Hewitt (U. S. C. C. A.) 52 Fed. (2d) 411.*

Physician's Liability to Patient for Performing Criminal Abortion.—The plaintiff sued the defendant physician to recover damages for alleged injuries resulting from an abortion which he performed on her. On her testimony that the defendant performed the abortion at her request, the trial court directed a verdict in favor of the physician. The court of appeals affirmed the judgment and the plaintiff petitioned the

Supreme Court of Tennessee for a writ of certiorori. According to the great weight of authority, said the Supreme Court, the interruption of pregnancy has always been regarded as highly offensive to good morals and injurious to society. As a general rule, no court will lend its aid to one who founds his cause of action on an immoral or an illegal act. In cases of this character the application of the rule is to be determined on considerations of public policy. Where the abortion is committed with the consent of the female, she should not be permitted to invoke the aid of a court, even though she is not regarded by criminal law as an accomplice to the crime. Here the plaintiff well knew the serious consequences likely to result from such an operation and that it was both illegal and immoral. In these circumstances, certainly, she is entitled to no relief. The Supreme Court refused to disturb the judgment of the court below, in favor of the physician.—*Martin v. Morris (Tenn.), 42 S. W. (2d) 207.*

Society Proceedings

COMING MEETINGS

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.
Western Branch of the American Urological Association, Portland, Ore., July 1-2. Dr. F. S. Dillingham, 548 S. Spring Street, Los Angeles, Secretary.
Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS

Forty-Seventh Annual Meeting, held at Atlantic City, N. J., May 3 and 4, 1932

(Continued from page 2316)

The Effects of High Protein Diets on the Course of Chronic Glomerulonephritis

Drs. William S. McCann and E. H. Keutmann, Rochester, N. Y.: Dr. McCann: Diet for patients with Bright's disease is frequently limited as to protein intake, with the exception of cases of lipoid nephrosis. Liberal protein is supposed by many to be injurious in Bright's disease. This question has given rise to much controversy. Experimental work on animals has shown that unusual amounts of protein have been given to animals in whose dietary it is unnatural. Interference with normal dietary habits of animals has been found to produce hematuria. In rabbits, high protein has been injurious only when green leaves and vegetables have been omitted from the diet.

In the early work of Newburgh and his collaborators on men, injury was produced by feeding liver (rich in nuclear substance) instead of beef muscle. Newburgh also produced hematuria by administering sodium nucleate.

Our studies of this question have covered both the intensity and the quantity factors in the pathologic process in Bright's disease. We used the method of Addis for intensity estimation and the urea clearance method of van Slyke for quantity. The subjects were four young men aged from 15 to 25 years. All were observed in the acute onset or exacerbation of hemorrhagic Bright's disease. One was in the chronic latent stage and three were in the chronic active stage. Observations extending over a year were made, during which time the diet contained about 75 Gm. of protein. The increase of the protein allowance to 200 Gm. a day for one week resulted in no ill effects. Encouraged by this result, we gave liberal protein allowances for longer periods. The process subsided in intensity throughout the period of liberal protein allowance, during the last two weeks of which liver was substituted for beef muscle as a source of protein. In the boy of 15 years, thus treated, there was no edema; the blood pressure remained normal throughout. Azotemia was increased during the higher protein periods. This is accounted for in part by the fact that it was necessary to limit fluid ingestion in order to carry out the sediment counts according to the technic of Addis. Even with this limitation, the highest value for nonprotein nitrogen observed was 45 mg. per hundred cubic centimeters and for urea 21 mg. per hundred cubic centimeters. The degree of positive nitrogen balance increased during liberal protein diets. During this period the values for urea clearance showed a tendency to increase. Similar results were noted in the other three patients; an increase in weight noted was not due to edema. Proteinuria tended to increase with an allowance of 150. Gm., but hematuria did not increase.

These observations led to the conclusion that patients in the latent or chronic active stage of hemorrhagic Bright's disease may be given diets containing from 75 to 80 Gm. of protein a day without adverse effects. In two cases an increase in proteinuria was noted when 150 Gm. a day was given, but in spite of this the renal function, as measured by the urea clearance, was not decreased. The hematuria was not increased and the renal function as measured by blood clearance improved; the blood pressure remained within normal limits and the patients improved clinically when a liberal allowance of protein was given in the diets.

Treatment of Subacute Hemorrhagic Nephritis with Streptococcus Nucleoprotein Vaccines

Drs. Clifford L. Derick and James P. O'Hare, Boston: Infection is found to be usually an important factor in the production of nephritis, particularly streptococcus infection. The studies of Longcope have emphasized this point. Hemolytic streptococci have been isolated from the throats and sinuses in these patients. The toxic filtrates of these bodies, when injected into the skin, produce a reaction similar to the Dick toxin. In our studies we submitted 670 patients to the skin test. We found the percentage of reaction greater in nephritic patients than in the average type. Our present study covers 67 patients. Eighty-three per cent of these gave reactions, of which 50 per cent were in nephritic patients. One of us (O'Hare) has called attention to the inadequacy of treatment other than rest and diet. Therefore an attempt was made to immunize some of these patients. An antitoxin made of the nucleoprotein products of streptococci was used, because it was found that patients become allergic to these products. The intravenous route was used for vaccination. The dosage had to be very carefully computed, as in patients with rheumatic fever. The attempt was made to avoid any general reaction or reaction in the urine, but the latter could not always be avoided. Sometimes albuminuria occurred. Patients were desensitized to the type of nucleoprotein to which they were most sensitive. They were followed as long as thirty-nine months and only two returned to the sensitive stage. Some patients are sensitive to a green streptococcus and some to the hemolytic streptococcus. Two patients were sensitive to both types. It was not easy to get desensitization to the green variety. Some of the patients used to have repeated colds, and of these five have had no recurrence of colds, and in others colds have been much fewer. Three cases were unsatisfactory. All these were chronic cases. This disease is definitely related to infection of the upper respiratory tract, and the streptococcus is the active agent. The patients can be definitely desensitized by the streptococcus nucleoprotein. No unfavorable results have been noted from the use of the vaccine, and the majority of patients have reacted favorably. It is therefore another useful method in our armamentarium.

DISCUSSION ON NEPHRITIS

Dr. George Baehr, New York: Much clinical observation suggests the conception of the causation of a glomerulonephritis. It is well known that the onset of an acute glomerulonephritis of scarlet fever occurs during the second week of convalescence. A number of years ago I had the opportunity of pointing out that true diffuse glomerulonephritis is rarely observed as a complication of the persistent streptococcemia of subacute bacterial endocarditis, whereas the incidence of the complication in patients with this disease, who have killed off their bacteria and become bacteria free, is even higher than after scarlet fever. Last year before this association I reported ninety-six cases of subacute bacterial endocarditis in which an anhemolytic streptococcus was persistently present in the blood stream through the long duration of the disease, and only twice was diffuse glomerulonephritis observed at necropsy, one instance being of doubtful significance. On the other hand, of fifty-nine patients who had successfully killed off their bacteria in the blood and vegetations early in the disease and who were observed in the bacteria-free stage of the disease, nineteen died of uremia as a result of a complicating diffuse glomerulonephritis, an incidence of over 30 per cent. Recently I had occasion to review fifty cases of Streptococcus hemolyticus bacteremia, and in not one instance was a diffuse glomerulonephritis found post mortem. It is therefore obvious that neither the presence of a hemolytic or a nonhemolytic streptococcus in the blood stream nor the excretion of their toxins by the kidney can be the cause of diffuse glomerulonephritis. The diffuse glomerular damage that follows streptococcal infections must be the result of phenomena concerned in recovery from infections.

D. D. VAN SLYKE, New York: I am interested in the work of Drs. McCann and Keutmann on the desirability of generous protein feeding in hemorrhagic nephritis. This fact in hemorrhagic nephritis as well as in degeneration nephritis has been confirmed by our studies at the Rockefeller Institute. We were cautious in giving generous protein diet to patients with decreased renal function, but as we have gained more experience we have found that it is desirable to use high protein to maintain the tissues in a state of good nutrition, but we kept the plasma proteins at such a level that the patients would not be edematous. At the present time I am inclined to think that there is no justification in keeping the proteins low in the diet of nephritic patients because of their nephritis. Our aim should be to keep up their nutrition and to disregard the fact that they have nephritis. We have found that the patients are in good shape until they fall into the hands of some physician. Patients often come to us with 10 or 15 per cent of renal function and in a fairly good state of health and continuing to work. They hardly realize they are ill. These patients are the ones who have had the good fortune to escape being dieted.

DR. HERMAN O. MOSENTHAL, New York: One word as to this conclusion. Such a diet has been used, and the patients ate from 50 to 75 Gm. of protein readily; but if the protein was raised beyond that point difficulty arose because patients could not consume with comfort larger amounts of protein. Consideration of the situation shows that a great error has been made in treating the kidneys solely. The kidneys are not necessarily damaged by proteins. Drs. Christian and Bartram observed that they could benefit the situation when they produced albuminuria by diuretics. As far as proteins in all types of Bright's disease are concerned, they diminish edema and prevent pneumonia. They do not change renal function; but one has to be on the lookout that in extreme cases the renal function is not overtaxed. With the exception of producing uremia, a high protein diet would be of benefit rather than harm.

DR. WARFIELD T. LONGCOPE, Baltimore: Reactions with injections have occasionally been obtained from patients. One ought to see how often these reactions occur and how serious they are. In tonsillectomy or in sinusitis there may be reactions showing red blood cells in the urine. This reaction usually subsides without doing any harm.

D. D. VAN SLYKE, New York: I do not want to give the impression that every patient has received a high protein diet. Some get 60 Gm., some 75. Unless the patient is given whatever he can take with comfort, difficulties in his general condition arise. One must take into account his digestive ability and general reaction and give him as much as he can take care of, to keep up his general nutrition, allowing for the fact that his renal function is subnormal.

DR. JAMES S. MCLESTER, Birmingham, Ala.: A more intimate knowledge of the pathology of both acute hemorrhagic nephritis and chronic degenerative Bright's disease, particularly as regards the ensuing plasma protein deficit, would indicate that in both forms of nephropathy the patient should be given diets containing liberal amounts of protein; in the former disease 100 Gm. daily, in the latter even more. Experience has shown that such an allowance facilitates recovery. In nephrosclerosis different conditions obtain, but even here there is no reason for rigid protein restriction and in order to maintain the patient's strength and vigor for the longest possible period the diet should be fairly liberal; it should provide approximately 75 to 100 Gm. of protein daily.

DR. WILLIAM S. MCCANN, Rochester, N. Y.: We do not consider very high protein diet as the optimal. I think the average patient can rarely take more than 100 Gm. with comfort. In some conditions the patient does well on a low protein diet. The effect of protein feeding on animals is worth consideration. Our studies have covered cases with the nephritic syndrome. The effect of high protein on the necessity for acid excretion must not be lost sight of. The excretion of phosphates, sulphates and acid must be considered, and the capacity of the kidney for acid base excretion must be taken into account. Our cases were in a state of subsidence from acute attacks. They were not in the early chronic active stage.

DR. CLIFFORD L. DERICK, Boston: In reply to Dr. Longcope, these patients frequently have an upset after tonsillectomy. We were able to give small doses and felt our way along. We could give about 10,000 at first. In regard to the number of treatments, we gave twelve to desensitize a patient, as far as the skin test shows desensitization.

Filtrable Forms of Bacteria and Their Significance

ARTHUR I. KENDALL, PH.D., Chicago: Almost exactly fifty years ago, Robert Koch announced the isolation and cultivation of the tubercle bacillus and demonstrated its relation to tuberculosis. Most important of all, he gave to medicine a method whereby a considerable number of bacteria could be studied in the laboratory and their relations to infectious diseases established. Improvements and refinements of method led directly to the discovery of other microbic incitants of infection, and for three decades the surge of discovery swept on. A time came, however, when there emerged from the multitude of microbic infections a formidable, heterogeneous group of diseases whose inciting agents resisted the most painstaking efforts of the laboratory. The members of this heterogeneous group failed to develop in the traditional culture mediums even when they were enriched with body fluids or bits of sterile tissue. The classic procedure of Koch had apparently reached a limit in its usefulness.

Exanthems, influenza, the common cold, certain types of arthritis, rheumatic fever and endocarditis, to mention but a few members of this group, exhibit in common three important characteristics: their inciting agents are invisible, unstainable and uncultivable in laboratory nutrient mediums thus far available. In endeavoring to discover the reason for current failure to cultivate the causative agents of these diseases, several of which are said to be filter-passing organisms, one is impressed by an important difference between the natural habitat of these bacteria in the body, and the character of the artificial medium in which their cultivation is attempted. In the body, the organisms are living in a protein environment of exquisite specificity and complexity; in the test tube, denatured protein (peptone), with or without enrichment, is offered to them. The difference between the body protein and the peptone of the laboratory mediums is really very great. Some conception of this difference may be gained when one contemplates the remarkable host specificity manifested by the virus of smallpox, for example; and some idea of the intricacy of this host-microorganism complex may be had by a consideration of the changes in virulence brought about when the human smallpox virus is modified in its virulence by passage through calves to produce vaccine virus.

If these observations are correct, it would seem reasonable to depart from the traditional peptone mediums and to offer to the refractory tissue parasites a pabulum more nearly in keeping with their natural nutritive environment; in other words, to make use of a protein-rich, peptone-poor medium in an attempt to induce them to grow outside the animal body. Such a medium (K medium), very primitive and greatly in need of refinement, has been devised. Through its use a certain amount of information has been gleaned which would lead us to hope that at least some of the problems relating to the etiology of the heterogeneous, refractory group of diseases under discussion may be more closely scrutinized. At present, the medium referred to is made from the intestines of hogs, which are first extracted with alcohol and benzene and then dried. This extracted, dried intestinal residue is immersed in Tyrode solution of proper reaction and sterilized in the autoclave. It is then ready for use. The medium falls far short of the ideal in many respects and is certainly a very poor substitute for the exquisitely specific and complex protein architecture of the tissues in which the organisms sought for are accustomed to grow; but, uncertain and crude as it may be, the hog intestine medium does seem to support the growth of organisms which have hitherto appeared to be uncultivable. To this extent it has justified itself. In it, certain bacteria, as Bacillus typhosus, have been rendered filtrable, and in the filtrable state these forms have been kept alive for several months. In this filtrable state the typhoid bacillus is invisible, unstainable, and uncultivable in ordinary mediums, and to this extent it has distinct relationship to the filtrable organisms in the body. Finally, typical typhoid bacilli, agglutinable with specific typhoid serum and having the proper morphology, staining and fermentation reactions, may be recovered from this filtrable organism. From these observations it would appear that it is logical to infer that bacteria, growing in the tissues, in the presence of protein and in the absence of peptone (unless pus formation occurs), might also be in the filtrable state invisible, unstainable and uncultivable in ordinary peptone-containing mediums. Evidence is available which indicates that such may be the case.

Observations on filter-passing and non-filter-passing bacteria in the urine seem to indicate that bacteria may exist in the body in the filter-passing state; that these bacteria in the filter-passing state are not stainable, not distinctly visible under the microscope, and not directly cultivable in ordinary nutrient laboratory mediums; that at least some of these bacteria in the filter-passing state are directly cultivable in a crude protein medium (K medium) and after development in this medium through repeated transfer they may be recovered eventually in a visible, stainable state, cultivable directly in ordinary nutrient laboratory mediums, and that these bacteria in the visible, stainable, cultivable state do not pass the pores of certain Berkefeld filters. Attention is drawn to the fact that there is a considerable group of micro-organisms growing in the tissues of the body which are not stainable, not distinctly visible under the microscope, and not directly cultivable in ordinary nutrient laboratory mediums. They are, or may be, filter-passing organisms. It is suggested from these analogies that at least certain of the micro-organisms now classified in this indefinitely defined group of "viruses" may be bacteria in the filter-passing state. The isolation and cultivation of bacteria from the urine in the filter-passing state opens up new problems of importance, both to clinical medicine and to public health. It is quite possible that typhoid, paratyphoid and other bacteria may thus escape from the body and with current laboratory methods escape detection. The relation of humoral and cellular forces of the body to bacteria in the filter-passing state is brought to the fore; nothing definite can be predicted at the present time, however.

DISCUSSION

Dr. Hans Zinsser, Boston: I have taken great interest in this problem since Dr. Kendall's first paper appeared. The subject is so fundamentally important that a correct solution must be sought by all bacteriologists. In attempts to follow the work in our laboratory, Dr. Kendall has sent us specimens of his medium. If his surmise is correct, the entire structure of our attitude toward the biology of disease must be changed. It is almost as important as the theory of spontaneous generation, and nothing short of absolute proof should be accepted or we may risk making research even more difficult than it already is. In following Dr. Kendall's work, my associates Dr. Seastone and Miss Blumer have come to believe that the medium does not consist of unchanged protein, as stated by Dr. Kendall. The material is treated with alcohol and benzene for considerable periods, and it is reasonable to assume, therefore, that the protein is altered. The protein is certainly changed as regards solubility. We cannot get it back into complete solution, and many of the tubes show considerable turbidity. Also, because of the varying amounts of insoluble material in individual tubes, the titer of such tubes varies within the same lot. In his report today, Dr. Kendall has not gone further than he had when his first paper was printed. If his conclusions are correct, he has brought about a revolution in bacteriology, but we do not believe that he obtained the organisms from the filtrate after repeated invisible cultivation in the K medium. In his report today, he did not state that he had recovered the original organism. Errors of sterilization are hard to avoid with a medium of this kind and filtration itself is a complicated process. We have found the Kendall material a much poorer one than ordinary broth. In regard to filtration, difficulties may occur dependent not only on reaction and on the grade of filters and the negative pressure but also on the nature of the medium in which the organisms are subjected to filtration. It may be said that there is no measure of a filter except filtration itself, and the permeability of filters varies individually. In our laboratory some years ago Dr. Grinnell found that if old cultures were filtered in broth suspensions under proper control, almost all our filters would let through bacteria which did not come through in salt solution suspensions. Also, control cultures from filtrates would often show growth only after eleven or twelve days' incubation. We interpret this as a result of the passing through of bacteria or bacterial fragments, and not as cyclic changes. If a divided earthworm can regenerate to some extent, why should not fragments of bacteria, which divide by amitotic reproduction? Under particular conditions most bacteria can, in this way, pass through filters. To prove Dr. Kendall's thesis we must hold ourselves to certain postulates which we have published. We must filter a pure culture through a filter which holds back the original organisms and obtain signs of growth of the invisible forms in the special medium. The original organisms should not appear in the filtrate cultures after incubation of two to three weeks, if cultures are made on mediums suitable for the species of organism used. The invisible forms must be carried along for several generations. It must be possible to recover the normal forms after successive invisible generations by ordinary methods. We must not under any circumstances confuse the mere passage through filters of occasional bacterial cells with a filtrable cycle of bacterial life history. I wish Dr. Kendall's surmise were true and could be proved, but at present it is dangerous for the progress of bacteriology to accept this work until it has been satisfactorily demonstrated. This theory must not be accepted until it can be as rigidly proved as was the nonexistence of spontaneous generation. As to the supposed relationship of the filtrable forms to the filtrable viruses, that question is a still more complex one. I shall let Dr. Rivers speak on that point. I believe that there is a fundamental difference between the filtrable virus group and bacteria in physical characteristics, in pathology, in immunology, and in the clinical manifestations of the diseases to which they give rise. In conclusion, I feel that, as far as I can see, there is no fulfilment in Dr. Kendall's work of the criteria by which alone the correctness of his surmise can be demonstrated. We must continue to demand rigid proof and try to show ourselves wrong before we can accept these theories to be correct.

Dr. T. M. Rivers, New York: Dr. Kendall's ideas are interesting. The idea, however, that filtrable stages occur in the life cycle of bacteria is old. The idea that this represents a virus is not a recent conception. Nicoll, Kraus and others have advanced these theories. Dr. Kendall has used a new medium. This is of particular interest because the K medium is suggested as being suitable for the cultivation of a virus. There are two problems to be considered. Does the K medium show that bacteria have filtrable forms? Do the filtrable forms of bacteria represent poliomyelitis, vaccinia, and so on? Is this medium suitable for their cultivation? The K medium seems to me to be starvation diet for bacteria. Does a starvation diet cause the nonfiltrable bacteria to become granular, pleomorphic and filtrable? Does the diet change the ordinary characteristics? Another problem is the relation of filtrable forms of bacteria to virus. No one has brought convincing evidence that filtrable virus exists in the absence of living tissue. This suggestion was tested in regard to vaccine and to infectious myxomatosis of rabbits. A meat infusion was made of peptone broth with inoculation of the virus, incubated at 30 and at 37 C. Serial transfers of the cultures were made to fresh mediums. Titer was established by animal experimentation. Multiplication of the broth virus occurs with bits of living tissue but not in any of the other mediums. After a second transfer the virus was reseeded in meat infusion, peptone broth and then in K medium. Dr. Kendall says it is invisible in K medium. I tested this. I attempted to make highly active material, free from bacterial contaminations. After cultivation for two weeks, examination for minute colonies of bacteria gave no evidence of any kind of organism. From the results of this work and the analysis of Dr. Kendall's there is no reason to suppose that the K medium will support the virus or that its use will shed light on the particular agents.

Dr. William H. Welch, Baltimore: However erroneous the interpretation may be of these theories, the fact remains that the observations of Dr. Kendall mark a distinct step forward. As Drs. Zinsser and Rivers have pointed out, bacteria may form granules. That is a very old observation. Perhaps the greatest discussion was in connection with the cholera bacillus. They never determined whether granules were carried in the living bacteria. Dr. Kendall has brought evidence that the much discussed granules (from the disintegration of the cholera or comma bacillus) are capable of growth. This was never done before. Therefore this observation marks a distinct advance in knowledge.

Arthur I. Kendall, Ph.D., Chicago: The K medium is crude. That is beyond question. If I understood Dr. Zinsser correctly, he said that I had not recovered the organism in the urine after the filtration. Perhaps I did not make myself clear on that point. I did get the staphylococcus and the streptococcus back. The staphylococcus was a characteristic one, and the streptococcus before and after the filtration was the same kind, as judged by fermentation reactions, as the one observed in the filtrable state. This seemed to show that the bacteria had been passed through the filters and then got back again to the original state in which they were filtrable and suitable for cultivation. I did not mean to raise a comment about filtrable virus. Apparently Dr. Rivers has succeeded where Dr. Zinsser was unsuccessful. I have in the laboratory a culture of typhoid bacilli that was passed through the filter, November 2; this has been in K medium up to March. It grows slightly but distinctly in the medium and it is possible to bring it back to the typhoid bacillus state, but it cannot be stained by any stain or cultivated in ordinary medium and it is invisible under the microscope. I have been interested in bacteria many years. I have been playing with them for about thirty-two years. I am not surprised that a great many have not succeeded in reproducing these things I have told about. The phenomena are different from anything I have seen before. These organisms have to be coaxed back. They have lost the ability to grow in ordinary laboratory mediums. Whether these forms that do pass filters grow in these conditions, whether they do, or do not, fulfil all the criteria as we know them of what filter-passing organisms are, is, I think, probable. For fifty years bacteria have been rather a puzzle, and we are not yet in a position to state definitely what science has failed to reveal to us in all this long time. In regard to the question of priority, which has been raised, that bacteria may pass filters is a modern idea; but if you want to know the original man who discussed the possibility of germs existing in two forms, read Lucretius, who in 50 B. C. wrote of germs existing in two states, one of which was insoluble.

Experiments on Active Immunization in Poliomyelitis

Dr. Simon Flexner, New York: This topic is not new. Experimental active immunization in poliomyelitis has been known since 1910. What I have to say relates to extension and modification of experiments that have been made in the intervening years. There is no doubt that the epidemic of 1930 has added stimulus to experimental work. The virus was obtained from human cases of 1909, the so-called mixed virus of the Rockefeller Institute, which is nearly 25 years old. It has been passed through monkeys for twenty-five years. The monkeys are inoculated intradermally. The animals develop a high immunity. Of four inoculated, all but one came through without symptoms; one developed symptoms and recovered. Two types of immunization were tried; a constant virus was tested against a varied serum, the latter a large amount. Then four animals which showed no symptoms were sprayed daily with instillations of virus in the nares, which is an effective way to introduce the disease. Without any lesion of the mucous membrane, all four animals developed fatal poliomyelitis. This virus has been permanently modified. It is immunologically not identical with the human strain, but it is not completely different. A type of virus from New South Wales, from patients' serum, is different from the American virus. Some doubt arises, therefore, whether active immunization is possible or desirable. Another question is whether it is possible to produce active immunity in monkeys. Immunity can be raised by injections given to recovered monkeys of a reinforced monkey serum, that is, a glycerolate of cord emulsion. This is the method of immunization of swine against hog cholera, and protecting dogs against distemper.

We have also tried to modify the virus so that it can produce immunity without causing paralysis. These experiments have to be carried much further. Not every batch of the material shows either antigenic purpura or infectious purpura, but if one can determine some degree of infectious purpura, that material in the skin of monkeys will give rise to immunity. It is an expression of neutralizing antibody giving resistance to intranasal injection.

It is certain that the virus passed through many monkeys has altered. It is more effective for monkeys. We cannot tell whether it is more effective for human beings. The next step will be to see whether it is more or less effective for anthropoids. Plenty of human volunteers are available but I think we are some distance from that yet.

The Early Use of Convalescent Serum in Poliomyelitis, Before Paralysis Has Developed: Comparison of Treated and Untreated Cases

Dr. William H. Park, New York: This study was a cooperative effort of the department of health, the department of hospitals, and a committee of the Academy of Medicine, to make potent convalescent serum available for therapeutic use, and, if possible, to evaluate the results. The cases were first reported to the health department laboratories; then the patients were visited by an experienced diagnostician. If the case seemed suspicious, spinal fluid was removed and sent by messenger to the research laboratory. If the diagnosis was confirmed, the patient was either sent to one of the hospitals, or was quarantined at home. If the family physician desired to have convalescent serum administered, one of the pediatricians from the Academy of Medicine was summoned. The average age of the treated group was about 6.5 years, and of the untreated group about 5.5 years. The average time of the administration of the serum was 1.6 days after the first meningeal symptoms. There was no definite indication that earlier treatment as compared with later treatment reduced the consequences. The antipoliomyelitis horse serum produced excessive meningitis when given intraspinally.

Observations on Poliomyelitis, with Particular Reference to So-Called Abortive Poliomyelitis

Drs. John R. Paul and James D. Trask, New Haven, Conn.: Epidemiologic studies on poliomyelitis, made in New Haven during the summer of 1931, indicate that cases of so-called abortive poliomyelitis may be of greater numerical importance than has hitherto been suspected. Our attention was primarily directed to this fact during the recent local epidemic by the appearance of many examples of mild illness characterized by signs of a general infection, such as fever, headache, vomiting or perhaps sore throat, but not by signs of meningeal or myelitic involvement. Such minor illnesses recall the picture originally described by Wickman to designate his "abortive types" of poliomyelitis, and they also reflect Draper's concepts of the first phase of the so-called dromedary form of the clinical disease, which, he believes, probably occurs more often alone than otherwise. As present usage of the term "abortive poliomyelitis" is ambiguous and is employed by some to designate those cases in which signs of meningitic and myelitic involvement are present but in which no paralysis develops, we have employed instead the term "characteristic minor illnesses in association with poliomyelitis." In our study of 222 families from each of which one or more cases of frank poliomyelitis had come, it was found that these minor illnesses developed in about 40 per cent of these patients' siblings (under the age of 15 years) more or less contemporaneously with the appearance of a frank case within the family. Control families showed a 10 per cent incidence of these minor illnesses among children of the same age during the epidemic period. The age distribution of those attacked with minor illnesses was quite similar to those attacked by frank poliomyelitis. In a study of three communities, during the local epidemic, the incidence of these minor illnesses proved to be about six times that of the frank cases of poliomyelitis.

Twelve attempts were made to isolate the virus of poliomyelitis, by the monkey inoculation test, from the throats of patients with characteristic minor illnesses on various days of the disease. Two of these attempts were successful. The virus was obtained from a single attempt made on the first day of a minor illness and in one of four attempts made on the second day. Four attempts to isolate the virus from the throats of healthy contacts proved negative.

The observations bring further evidence to bear that mild and unsuspected examples of poliomyelitis may be of major import in the spread of this disease.

DISCUSSION ON POLIOMYELITIS

Dr. Simon Flexner, New York: My personal experience is wholly with the experimental disease in monkeys. There the use of immune serum does make a difference. As between human beings and monkeys, the conditions are not identical; but the advantage is in part with the human beings. The more inclusive the cases recognized as preparalytic poliomyelitis are, the higher is the proportion that escape detectable paralysis. Probably, in part at least, the lower mortality of the epidemic of 1931 is accounted for by the greater skill in diagnosis. There is therefore an inherently effective agency at work in aborting poliomyelitis in man. This agency is far less effective in monkeys. The experimental disease in these animals is rarely abortive (although many resist weak, unadapted virus strains), but it tends to be far more severe and fatal in monkeys, which do not have the uninoculated disease, than in man, who does. The severe form of experimental disease in monkeys can be prevented or mitigated by means of immune serum. Since the practice of medicine is applied to individual cases of disease and does not, except statistically, deal with disease in mass, the question may fairly be asked whether the preexisting mechanisms in man tending to confine and abort the virus infection cannot be supplemented and fortified by convalescent serum in some instances, I do not think this question can now be answered in the affirmative, and I equally do not believe that it can be answered in the negative. It is generally agreed that the use of human convalescent serum does no harm. Since it cannot be affirmed that, in an individual case, it does no good, should its use be withheld? That is a question to be answered not by the pathologist but by the practitioner. If a better, more calculable, method of preventing the paralysis were known, that is, a surer way of supplementing the normal mechanism which tends to restrain the action of the virus of poliomyelitis before it injures functionally the motor nerve cells, no question, such as I am presenting, would arise. However, there is no better and more calculable method known. The choice is therefore between no therapeutic intervention at all and a kind of therapeutic intervention believed to be harmless and not known actually not to be sometimes useful in cases of this tragic disease.

Dr. William H. Park, New York: In the opinion of the workers of the state department of health, the serum did not do any particular good. However, there is another way of looking at the matter, as Dr. Flexner has pointed out, and that is a personal one. I should like to put the question to every man here, If it was his child that had poliomyelitis, would he or or would he not give the serum?

Epidemiology of Typhus Fever and the Possible Evolution of the Rickettsia Disease Group

Drs. Hans Zinsser, Herman Mooser and M. Ruiz Casteneda, Boston: Typhus fever differs according to locality. That in Mexico is different from that in Europe. In both localities, susceptible rats and mice act as the animal reservoir. They are infected by ticks, bedbugs, rat fleas and rat lice. The flea is the most likely carrier. The disease is carried to man by the close association of rat and man. In regard to lesions, the characteristic brain lesions found in the European type are also found in Mexico. In some countries a scrotal lesion is more common. Perhaps the scrotal lesion may immunize against the brain lesion. A certain immunologic relationship is found between strains in different parts of the world. In testing these, the most useful animal is the guinea-pig. It presents the characteristics of the disease as regards temperature curves, mortality, scrotal lesions and brain lesions. The types of disease giving scrotal lesions show a cross immunology. It is thought that perhaps different insect forms in different countries influence the strains and cause differentiation in types. However, the New and Old World types may, at times, approach each other with great exactness.

Rickettsia are able to survive in a considerable number of rodents, rats, mice and rabbits. The spotted fever type is most adapted to the life of the tick. It is highly infectious. The virus can always be rejuvenated by passing through man. In the Old World the disease is kept alive in lice-infested districts; in the New World it is propagated by rat fleas. Probably the rodent reservoir occurred first and the insect adapted itself. Studies seem to show that the louse-man cycle is later than the tick-flea-rat cycle. We also believe that the African virus and the Old World virus are similar, or the same thing.

Relapsing Fever and Rat-Bite Fever in the United States

Dr. Edward Francis, Washington, D. C.: Weller and Graham collected evidence of about fifty cases of relapsing fever occurring during the last few years in Texas traceable to tick bites received while visiting caves in Llano, San Saba, Mills, Travis and Denton counties. Ticks of the species Ornithodorus turicata collected in dry dust taken from the floors of caves in Mills County and San Saba County, Texas, and received in our laboratory conveyed relapsing fever, acquired in nature, to rhesus monkeys on which they fed. Six days after being bitten by ticks, the monkeys manifested an abrupt onset of fever lasting a day or two, followed by normal temperature for four or five days, then six similar pyrexial attacks and six intermissions, followed by spontaneous recovery. Spirochetes having a length about twice the diameter of a red blood corpuscle were found by dark field examination and in stained smears of the monkeys' blood at times of fever, but not between. Bedbugs which were infected with this strain in the laboratory by feeding on the tails of infected white mice were capable for six months after their last infective feed to infect white mice into which they were injected but were never able to infect healthy mice on which they fed every ten days during the six months. California reported in 1931 ten cases of relapsing fever of man, confined by demonstration of the spirochetes in the blood.

A boy, aged 6 years, had seven paroxysms of fever in thirty-seven days. Macular eruption, demonstration of spirochetes in inoculated animals, and cure of the patient with arsphenamine clinched the diagnosis. There was no actual history of rat bite but there was edema of the penis, which extended from a very small healed point. A small amount of fluid aspirated from a slightly enlarged left inguinal lymph node and injected into a white rat yielded a strain of spirochetes, which was carried through white mice, white rats and guinea-pigs. The organism was a short spiral having few turns, few in number, very active in dark field preparations of animal blood, showing flagella at the ends, and having a length about half the diameter of a red cell. Much time can be consumed in fruitless search of the patient's blood for spirochetes. Only once (Steiner) has the organism been seen in the blood of cases contracted in nature in the United States. Shattuck and Theiler injected the patient's blood into white mice and guinea-pigs. Lanford and Lawson injected a white rat with lymph node juice of the patient. Bayne-Jones injected a guinea-pig with a macule from the patient's skin. The blood of white mice examined by dark field frequently for fifteen days after inoculation yields the quickest and surest demonstration of the spirochetes. An eye accustomed to the slow backward and forward movements of Spirochaeta pallida may completely fail to grasp the significance of the darting progression of one short Spirochaeta morsus-muris.

DISCUSSION ON FEVER

Dr. Hans Zinsser, Boston: We made a search for typhus fever in rats in Boston, and found a considerable number of rats infected. We found that many rats suffered from rat-bite fever. Many of them had pseudo-encephalitis, and there was considerable morbidity among rats with rat-bite fever, so that it is surprising how few cases of typhus fever are reported among human beings.

Dr. W. S. Thayer, Baltimore: The seriousness of rat-bite fever was impressed on me in Rome in a case in which a child of a friend of mine was the victim. The child awakened with a sudden cry and was found with the finger bleeding. After this the child suffered from peculiar phenomena and became very ill. An associate of the Pasteur Institute was called in and he asked whether any rats had been noticed. The nurse then recalled that a big rat had been seen in the room where the child slept. The wound was reexamined and the scar was found to show the indentations of the rat's teeth.

Dr. W. W. Ford, Baltimore: With regard to rats in Baltimore, we have obtained the organism of rat-bite fever from rats and transferred the material to white rats, in our work on search for parasites. We have found a leptospirillum, trypanosomes, and the spirillum of rat-bite fever. The rats, however, serve mainly for demonstration purposes in teaching. Although a large proportion of rats are infected, cases of rat-bite fever are rare in Baltimore, and spirochetal jaundice is not observed.

Dr. Emanuel Libman, New Yoak: In rat-bite fever the chances of infection are numerous, but the cases of fever are unusual. I saw two cases thirty years ago. Since then I have seen no cases in New York.

Dr. George Blumer, New Haven, Conn.: The first case of rat-bite fever that was reported was in 1830. Recently in the library at Yale I found notebooks of the students of Eli Ives, an early professor. In his lectures it was stated that the bite of the rat was dangerous under certain circumstances, and a satisfactory account was given of all the symptoms of rat-bite fever, which was noted thirty years ago.

Dr. Edward Francis, Washington, D. C.: We don't find many cases, and there have been no instances in which the spirochetes were found in the patient. They have been recovered in inoculated animals but not in man. The only way to get the spirochetes is to inoculate experimental animals.

Dr. Walter R. Steiner, Hartford, Conn.: In a report I presented to the American Climatological and Clinical Association, I thought that I had found an organism which was a spirochete. I was unable to cultivate it. It was immobile, and I found that instead of being a spirochete it was a spirillum. I had a photomicrograph made of the organism.

Dr. Francis G. Blake, New Haven, Conn.: Previous experiments in animals have suggested that basic active immunity to pneumococcal infection may depend on common antipneumococcal species rather than on type-specific antibodies. To test this theory the titer of antipneumococcal species agglutinins has been determined in the blood serum of 887 individuals from birth to old age, and the cumulative percentage curves for each of the titers found (0 to 1:10,240) have been compared with morbidity rates of the different types of pneumococcal pneumonia according to age. Since these curves seem to show a significant relation between low agglutinin titer and morbidity, the work has been pursued further by studying the course of subcutaneous pneumococcal infection in two groups of guinea-pigs, those with and those without species agglutinins in the blood. None of the animals in either group had detectable type-specific agglutinins in the blood serum. Following subcutaneous injection of 0.5 cc. of a saline suspension of virulent type-specific pneumococci, guinea-pigs with antipneumococcal species agglutinins showed a transient mild inflammatory reaction with a duration of from twenty-four to ninety-six hours, with prompt recovery, while those without species agglutinins showed a severe spreading cellulitis with a duration of from seven to eighteen days, frequently with hemorrhage, necrosis and ulceration, and with death in a considerable proportion. These results are in harmony with the view that basic active immunity to pneumococcal infection is a broad antipneumococcal species immunity and that the titer of species agglutinins may be a rough measure of susceptibility or resistance.

Advances in Serum Therapy of Pneumonia, Meningitis and Scarlet Fever

Dr. Augustus Wadsworth, Albany, N. Y.: The bacterial incitants of infectious disease differ markedly in virulence, in their parasitic adaptation to the tissues of an animal, in the potency of the toxins which they produce, and in their immunizing action. These capacities of the micro-organisms determine not only the chararter, extent and course of the disease processes but also the potency and valence of the therapeutic serums that are prepared from them. From the beginning, the quality of the antipneumococcus, antimeningococcus and antistreptococcus serums that have been generally available has varied greatly. While definite improvement has resulted from the establishment of federal and (in New York State) state control and supervision, the distribution of unsatisfactory serums has not been altogether eliminated. The practice of concentrating serums of low potency is commercially profitable, but unless the method is used solely to improve the quality of serums of the highest potency attainable there is no practical advance.

A total of 853 cases of type I pneumonia, treated with unconcentrated serum of the highest potency, had a mortality of 12.4 per cent, which, with the elimination of cases unsatisfactorily treated, approximated the mortality in Dr. Rufus Cole's series of cases at the Rockefeller Hospital; namely, 10.9 per cent. With antimeningococcus serum, a mortality of 18.4 per cent was recorded in a series of 742 cases of meningococcus meningitis. Favorable results were obtained with a monovalent unconcentrated antistreptococcus serum in the treatment of scarlet fever, erysipelas and other forms of streptococcus infection. A mortality of 4.3 per cent was reported in 1,052 cases of scarlet fever, of which 402 were classified as severe, 441 as moderate, and only 209 as mild. The mortality of the 194 cases of erysipelas was 8.2 per cent, and the serum appeared to be quite as effective in this disease, although, in a few instances, the serum, so far as could be ascertained, had no effect, indicating the importance of the selection of the strains and of a broad valence as well as a high potency in the serum.

DISCUSSION ON IMMUNIZATION

Dr. William H. Park, New York: Dr. Ross is trying to immunize human beings by feeding pneumococci of types 1, 2 and 3. Only 1 per cent may have type 1. I think there is great variation in individuals so far as the mouse potency test goes.

Dr. F. T. Lord, Boston: Dr. Wadsworth has spoken of the problems of the laboratory. There are also practical problems in putting the product into circulation. In Massachusetts there are technical difficulties which confront the doctor. These difficulties have to a considerable extent been overcome in Massachusetts in respect to meningococcus pneumonia by an organization which deals from a central source in cooperation with the physician. The state commissioner of health has control of a grant to provide serum treatment for cases of pneumonia. Through this generous grant from the commonwealth we have been able to carry on satisfactorily. The School of Public Health at Harvard studies the epidemiology of the disease. The White antitoxin and vaccine laboratory of the state standardizes the potency of the serum after the method of Felton. We have also funds enough to cover the clinical work in the state. There is a state advisory committee. There are eleven areas in which we have set up a pneumonia service. In each of these centers we have technicians trained in pneumococcus typing, and connected with the advisory committee we have three or four physicians practicing in each area. The concentrated pneumococcus serum is given to these physicians, and the physician may call in consultation, if he wishes, a man from the laboratory to give the serum. We have accomplished one thing. We have made a short disease of lobar pneumonia, and we have eliminated a large number of the cases. The dosage given is 5 cc., 25 cc. and then 45 cc. at intervals of two hours. We do not yet know what the ideal dose is. This program has been carried out for eighteen months. The clinical records are being filled out and returned to us. We have records of eighty-nine patients treated before the fourth day. The mortality record is 12.3 per cent.

DR. AUGUSTUS WADSWORTH, Albany: My reason in presenting this paper was not to urge general use of antistreptococcus serum, although that is our ultimate aim, but to stress the importance of a thorough, painstaking investigation of the different strains of streptococci. When we obtain a serum of practical value, it will be made available for distribution.

Isolation of Spirochaeta Pallida from the Lesion in Gastric Syphilis

DRS. HUGH J. MORGAN and SEALE HARRIS, JR., Nashville, Tenn.: *This article will appear in full in* THE JOURNAL.

Reaction of Immune Rabbits Toward Reinoculation with Heterologous Syphilitic Virus

DRS. ALAN M. CHESNEY, THOMAS B. TURNER and FRANKLIN H. GRAUER, Baltimore: It has been established by several groups of workers that rabbits, during the course of an experimental syphilitic infection, acquire a resistance against the particular strain of spirochetes with which they were originally infected, and that this resistance persists after intensive treatment with arsphenamine. It has also been shown that this resistance is oftentimes not effective against heterologous strains of spirochetes obtained from different sources. Hitherto this resistance has always been tested by inoculating the animals by subcutaneous or intratesticular injection, a method that is favorable to the inciting agent and does not resemble the usual mode of infection in man. It was found that the resistance which develops in rabbits during the course of syphilitic infection is not effective against heterologous strains when the reinoculation is performed by dropping the inoculum on an intact mucous membrane surface, thus more closely simulating the natural conditions of infection in man. Even under conditions closely simulating the usual mode of inoculation in man, the resistance is found to be strain-specific, not species-specific. The extreme rarity of second infections in man, as pointed out by Kolle, suggests that in the case of human beings acquired immunity to syphilis is effective against heterologous strains of spirochetes, a condition that does not hold true for rabbits. If this discrepancy in the behavior of the two species (man and rabbit) toward heterologous strains really exists, as appears to be the case, it is necessary to be cautious in applying wholesale to human syphilis the results of study of immunity in the experimental infection in rabbits.

The Contagion of Tuberculosis

DRS. EUGENE L. OPIE and F. M. MCPHEDRAN, Philadelphia: We studied a group of families with histories of tuberculosis. We divided them into (1) sputum positive, (2) sputum negative, (3) suspected cases and (4) no member with tuberculosis. Our tests included repeated sputum examination, roentgen examinations, clinical examination and tuberculin tests. We found that there were many latent unsuspected cases in which tuberculin tests were the only evidence, although some patients showed roentgen changes. Latency represents the preclinical period of tuberculosis. This represents a serious problem, as all manifest tuberculosis is preceded by a period of latency. Marital contagion is a frequent source of exogenous infection. Adolescents often become reinfected in the home. On consultation, 12.4 per cent of patients were sputum positive and 4 per cent sputum negative. There was latent apical tuberculosis in 35 per cent. A wife with a sputum positive husband is very likely to acquire tuberculosis. Age is an important factor; adolescents are very likely to acquire contagion.

DISCUSSION

DR. F. T. LORD, Boston: There would appear to be a very important corollary to this work, which I believe Dr. McPhedran would endorse, and that is on discovery of a case of tuberculosis it is extremely important to examine the family. The state of Massachusetts has been conducting a ten year program of the skin testing of school children. The reaction is present in 27 per cent of our school children. There is 1 or 2 per cent of childhood tuberculosis and 1 in 1,000 present the familial type of tuberculosis. It is extremely important for the health of children that we discover tuberculous families. We must discover not only the infected child but also the source of his infection. Bovine tuberculosis plays a minor rôle in adults.

DR. WILLIAM H. WELCH, Baltimore: Infection with tuberculosis in childhood is not comparable with marital infection. I should like to ask Dr. McPhedran about this point. I think these are significant observations because they indicate that cases of tuberculosis in adult life are the result of reinfection. They are supposed to be due to lowered resistance lighted by infection already existing. Marital partners had already been infected. Are these reinfection with bacilli from an infected partner, or is it a case of lowered resistance without new infection? Marital tuberculosis should be considered quite apart from the tuberculosis of childhood.

DR. HAVEN EMERSON, New York: I think the great significance of Dr. McPhedran's communication is in regard to the question of reporting the disease. Half the active cases of tuberculosis are not known and 29 per cent are not reported at all until within one week of death, or even after death. Fifty-three per cent are under no kind of sanitary supervision. In Boston I took a group of fifty active cases in which the patients had in the aggregate been exposed to infection for 1,500 years. These fifty patients had, in their own homes, been known to be from six to ten years in contact with tuberculous infection. The gap between our knowledge and our practice is becoming wider. Our authorities lag further and further behind in preventive work. One means that can be used is repeated examination of school children. We are now examining 500 school children in three hours, at a cost of 75 cents apiece. That is making a beginning. We get an exact examination of the chest. But that does not protect the child. The failure to protect the child when a case of exposure to infection is discovered is the colossal blunder of the public health movement of today.

DR. F. M. MCPHEDRAN, Philadelphia: Dr. Lord has pointed out the necessity of searching for the source of infection when a diagnosis has been made. This is very important. Dr. Welch has spoken of exogenous infection. This is an interesting point. From a study in Philadelphia over ten years, I think that half the cases present reinfection. There is no doubt that adolescent tuberculosis is due to reinfection. With high counts in the sputum, these patients go down very rapidly. I have found that in Italians the resistance is good. In some districts 75 per cent of the population is Italian. When controlled by figures among the Jewish population, I found about the same proportion of cases. The question of preventing continued infection is the crux of the whole matter. It is necessary to distinguish between sputum positive and sputum negative tuberculosis. In the children of grade school age, tracheobronchial infection has been made reportable. After one has got past the grade school, one can trace the source to the family, but one can't do much. In the high school age one gets lesions of immediate significance.

Plasma Proteins in Patients with Anemia

DRS. CHESTER S. KEEFER and WALTER K. MYERS, Boston: We do not see much edema in patients with enemia. We therefore examined the blood plasma of twenty-six anemic patients to see whether there was reduction of the plasma proteins. These cases included anemia from malnutrition, pernicious anemia and anemia due to loss of blood. The hemoglobin examined ranged from 12 to 60 per cent; the red blood cell count was from a half to three million. We sought to find whether there was any relation between the hemoglobin and the presence of edema but found no connection between the two. There was also no relation of the total proteins and the hemoglobin. We found that the total proteins were related to the edema. When edema was present, the total proteins were below 5 per cent. If the total proteins were above this there was (with few exceptions) no edema, either while the patients were in bed or when they were walking about. In some patients with low proteins, however, there was no edema. We found that there was no relation between blood loss, as from trauma, and edema. Our studies showed that with restricted protein intake, causing malnutrition, there was tendency to edema and low proteins in the blood.

(To be continued)

Current Medical Literature

AMERICAN

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Some Phases of Liver and Gallbladder Function: Experiments on Rabbits with Certain Organic Compounds, Particularly Dyes. Béla Halpert and M. T. Hanke, New Haven, Conn.—p. 433.
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Effect of Fasting on Activity of Skeletal Muscle.—Leese and his associates made a study of the effects of fasting on the activity of the artificially stimulated intact gastrocnemius muscle of the anesthetized rat. The phases of activity studied were the number of stimuli required to produce fatigue and the amount of work done by the muscle. The results indicate that fasting for periods of from 24 to 144 hours did not affect either the rate of fatigue or the total amount of work done by the artificially stimulated intact muscle. Studies were made on the glycogen content of liver and muscle from control and exercised animals. In all experiments, fatigue occurred before an exhaustion of liver and muscle glycogen. The amount of work performed by the muscle and the rate of fatigue were found to be independent of the amount of glycogen present in liver and muscle at the beginning and at the end of the experiments.

Specificity of Pancreatic Lipase.—Cherry and Crandall report that following obstruction of the pancreas in dogs an olive oil splitting lipase appeared in the blood in large amounts; there was no significant uniform change in esterase as measured by hydrolysis of ethyl butyrate or tributyrin. This is interpreted as evidence of the specificity of lipase; it is suggested that this term "lipase" be reserved for the enzyme (or enzymes) capable of splitting true fats and oils, and that the term esterase be used for the enzyme (or enzymes) acting on the simple esters. Lipase (olive oil splitting) was found in significant amounts only in pancreas, intestinal mucosa, liver and spleen. All tissues studied contained an esterase. A study of the activity of pancreatic and liver extracts and blood serum on twenty-one different esters gave no evidence of specificity other than that indicated by the absence of activity toward olive oil in certain tissues and its presence in others.

Insulin in Tissues Other than Pancreas.—Using a method of extraction which yields maximal amounts of insulin, from pancreas, Best and his associates were unable to demonstrate the presence of an antidiabetic substance in other normal tissues from the dog or ox or in the tissues of diabetic dogs. Positive results previously reported they believe can be attributed to one or more of several factors, each of which they discuss. Certain experimental results that have indicated a wide distribution of an insulin-like substance in the plant kingdom were not confirmed.

Action of Epinephrine and Parasympathetic Drugs on Intestine.—Bernheim and Blocksom describe experiments in which they demonstrated that epinephrine added to the ileum of a guinea-pig which has been contracted by pilocarpine or physostigmine causes a further contraction, which may or may not be followed by relaxation. After histamine, epinephrine always causes relaxation, but the relaxation occurs after a definite latent period. The relaxation is more rapid and the latent period shorter in the presence of nicotine or atropine. These facts indicate that epinephrine may act as an adjuvant to parasympathetic drugs and that its action is dependent on the amount of parasympathetic stimulation.

Digestive Leukocytosis.—Garrey and Butler are of the opinion that the low basal leukocyte count of the resting state is unaffected by the intake of large quantities of either protein or carbohydrate. Sudden distention of the human stomach, or abrupt changes in gastric temperature, due to hot or cold fluids, cause an immediate but mild and transient rise in the leukocyte count. Animal experiments indicate that these reactions are due solely to reflex vascular disturbances but have no relation to the absorption of digest. All experiments indicate that there is no digestive leukocytosis in normal adults.

American Journal of Psychiatry, Baltimore

11: 831-1024 (March) 1932

Psychiatry in Medicine. F. P. Moersch, Rochester, Minn.—p. 831.
Influence of Religious Ideas on Etiology, Symptomatology and Prognosis of Psychoses, with Especial Reference to Social Factors. C. B. Farr and R. L. Howe, Philadelphia.—p. 845.
*Treatment of Involution Melancholia with Ovarian Hormone. K. M. Bowman and Lauretta Bender, Boston.—p. 867.
Mental Reactions at Climacterium. G. R. Jameison and J. H. Wall, White Plains, N. Y.—p. 895.
*Paranoid Reaction Occurring in Women of Middle Age. G. H. Stevenson and S. R. Montgomery, Whitby, Ont., Canada.—p. 911.
Study of Depressions in Late Life, with Especial Reference to Content. Eleanora B. Saunders, Towson, Md.—p. 925.
Scientific Psychology and Schools of Psychology. L. Carmichael, Providence, R. I.—p. 955.
Philadelphia and Psychiatry: Introduction. H. D. Palmer, Philadelphia.—p. 969.

Treatment of Involution Melancholia.—Seven patients with involutional melancholia were treated by Bowman and Bender with an ovarian hormone preparation. The method and amount of treatment varied. A careful study before and after treatment was made of the blood pressure, basal metabolism, blood chemistry (including nonprotein nitrogen, uric acid, cholesterol, fasting sugar and sugar curve), and the galactose tolerance. Two patients showed a good social recovery. Three patients were unimproved and now show a chronic picture. Two patients died, one of anemia and bronchopneumonia, and one of carcinoma of the uterus. The treatment, therefore, appears to have had little or no effect on the final outcome of these cases. In giving the ovarian hormone preparation, the authors had in mind the possible restoration of the menstrual cycle. The results were quite different. Except in one case, in which a very slight flow occurred on two occasions, the effect of treatment was to cause complete cessation of the menses. In three cases there was menstruation up to the time of treatment, but none after treatment started. In one case menstruation continued for two months after treatment and then ceased. One patient had had a panhysterectomy, so that no changes were possible. One had had the menopause eleven years previously, and treatment produced no effect. Very little change occurred in the blood chemistry during treatment. When such changes did occur, they were usually in the direction of a more normal condition. However, some patients did show disturbances in weight, arterial tension, and increase in nonprotein nitrogen not due to any apparent cardiorenal-vascular disease, a low blood cholesterol, disturbances in sugar curves, and low basal metabolism. These may all be favorably influenced by glandular therapy, especially the specific female sex hormone. Such therapeutic measures may improve the patient's general physical condition, alleviate distressing symptoms, remove abnormal sensations which may be feeding delusional trends, or shorten remissions, and in some instances are apparently associated with complete clinical recoveries.

Paranoid Reaction.—According to Stevenson and Montgomery, there appears to be a clinical subentity in the psychogenic or "reaction to environment" group of psychoses, in which the chief symptoms are persecutory delusions, with or without hallucinations, and without obvious personality or intellectual changes, occurring in highly moral women, and becoming apparent during the fifth and sixth decades after a long prodromal period, the change from normal to psychopathic being so gradual that relatives have found difficulty in fixing the date of onset, and persons who have but slight contact with the patient are not aware that the individual is suffering from a psychosis. A close study of many cases admitted to mental hospitals over a period of years has convinced the authors that there is a specific etiologic factor, among others common to the group as a whole. This so-called specific factor they believe to be an overt or imagined sinful act on the part of the patient, which is not sinful to the patient, however, as she either projects the blame on others or denies that it would have been consciously desired by her. The situation is thus not dealt with adequately and honestly, and a state of emotional unrest is produced. As a quietus to conscience, a persecutory delusional trend is developed slowly and progressively until a well marked psychosis results.

American Journal of Surgery, New York

16: 1-198 (April) 1932

Some Experiences with Oleothorax. H. C. Ballon, St. Louis.—p. 1.
Anomalous Prolongation of Esophagus Below Diaphragm, Facilitating Total Gastrectomy. B. R. Kirklin, Rochester, Minn.—p. 12.
Rôle Played by Spinal Nerves in Functional Disturbances of Digestion. C. E. McDermid, Niagara Falls, N. Y.—p. 14.
Radical Operation for Carcinoma of Penis. H. W. Meyer,, New York. —p. 21.
*Carcinoma of Breast E. Alden, Los Angeles.—p. 22.
Diffuse Skeletal Metastasis Following Radical Removal of Both Breasts: Case. I. I. Kaplan, New York.—p. 25.
Present Status of Cancer of Cervix and Uterus. C. H. Weaver, Los Angeles.—p. 28.
Total Volvulus. E. C. Brenner, New York.—p. 34.
*Traumatic Lesions of Abdominal Viscera. J. W. Hinton, New York. —p. 45.
Strangulated Femoral Hernia: Gangrene of Ileum; Anastomosis with Delayed Resection. A. de Poto, Jamaica, N. Y.—p. 48.
*Recurring Omental Hypertrophy Simulating Abdominal Tumor. J. G. Probstein, St. Louis.—p. 50.
Chronic Ulcerative Colitis: Surgical Treatment with Report of Three Cases, Seven, Eight and Nine Years Later. J. R. Regan and E. H. Mensing, Milwaukee.—p. 52.
Acute Intestinal Obstruction by Large Gallstone. A. van Ravenswaay, Boonville, Mo.—p. 56.
Fistulous Tracts: Diagnostic Value of Opaque Medium of Known Contour and Consistency. W. W. Wasson, Denver.—p. 57.
Fistula in Ano: Etiology: General Consideration. C. D. Gaston and M. D. Hogan, Birmingham, Ala.—p. 62.
Internal Hemorrhoids: Their Pathogenesis and Rationale of Injection Therapy. R. I. Hiller, Milwaukee.—p. 64.
Surgical Treatment of Pulmonary Tuberculosis. A. W. Hoaglund, Minneapolis.—p. 68.
Choice of Anesthesia. V. E. Johnson, Atlantic City, N. J.—p. 72.
Elephantiasis of Scrotum: Operative Technic. J. I. Knott and J. B. Rice, Liberia, West Africa.—p. 78.
Subungual Exostoses: Report of Two Unusual Cases. A. D. Kurtz, Philadelphia.—p. 81.
Atony of Bladder: Report of Case. H. L. Kretschmer and N. J. Heckel, Chicago.—p. 84.
Resection of Arsenical Epithelioma: Plastic Reconstruction of Heel. H. Milch, New York.—p. 89.
Uterine Transposition of Ovary with Conservation of Its Vascular Nervous Pedicle. R. Petit, Paris, France.—p. 94.
Hydrogymnastic Exercises for Acute Injury: Personal Experience. C. L. Lowman, Los Angeles.—p. 101.
Embryogenesis of Anencephalia and Spina Bifida. F. A. Mandruzzato, New York.—p. 104.
Theories of Mycosis Fungoides, Hodgkin's Diseases, and so on: Two Case Reports. B. Markowitz, Bloomington, Ill.—p. 113.
Prostatic Harpoon: New Tractor for Suprapubic Prostatectomy. I. Wills, Santa Barbara, Calif.—p. 118.
Simplified Catheterizing Cystoscope. H. D. Furniss, New York.—p. 120.

Traumatic Lesions of Abdominal Viscera. — Hinton urges an immediate laparotomy in cases in which one is reasonably certain of an injury to a hollow viscus from traumatism to the abdomen. If the diagnosis is questionable, however, through the symptoms being masked between those of a rupture of a solid organ, such as the liver, kidney or spleen, and retroperitoneal hemorrhage on the one hand, as against injury to a hollow viscus, it is to the patient's advantage to employ conservative methods of treatment rather than to submit him to immediate operation. If this principle is followed, one will have a lower mortality and morbidity in cases of injury to the abdominal viscera.

Recurring Omental Hypertrophy.—Probstein believes that primary hypertrophy of the omentum is probably not associated with any inflammatory condition, especially in view of the lack of microscopic observations to substantiate the term "omentitis or epiploitis," thereby suggesting a state of inflammation. This hypertrophy may be due to some circulatory interference rather than to an infection in which the omentum becomes enlarged, edematous and hemorrhagic. The term "omental hypertrophy" seems much more appropriate to the author in view of his observations than omentitis or epiploitis, which suggest the association of the pathologic changes with an inflammatory condition.

American Review of Tuberculosis, New York

25: 419-575 (April) 1932

*Oleothorax. R. W. Matson, Portland, Ore.—p. 419.
*End-Treatment of Artificial Pneumothorax: New Use for Phrenic Avulsion. J. C. Dundee, New York.—p. 469.
Artificial Pneumothorax Abandoned and Reestablished. E. H. Rubin, New York.—p. 490.
*Observations on Accessory Roots in Phrenic Exeresis. L. Fisher, Waverley Hills, Ky.—p. 497.
*Pulmonary Tuberculosis Without Pleural Involvement Simulating Chronic Adhesive Pleurisy. E. N. Packard, Syracuse, N. Y.—p. 502.
Danger Period in Treatment of Pulmonary Tuberculosis. J. B. Hawes 2d, Boston.—p. 507.
Some Reasons for Treatment of Tuberculosis Patients in General Hospitals. A. T. Laird and R. M. Mayne, Duluth, Minn.—p. 512.
Incidence of Tuberculous Infection Among Students of High School. Edith S. Hewitt and R. E. Cutts, Rochester, Minn.—p. 525.
*Blood Sedimentation Tests, Modified Arneth Method and Schilling Count: Comparison of Their Diagnostic and Prognostic Significance. H. I. Spector and R. O. Muether, St. Louis.—p. 533.
Studies on Vital Function: X. Influence of Brief Preventorium Treatment on Pretuberculous Child. A. W. Rowe, Mary McManus and Dorothy E. Gallivan, Boston.—p. 546.
Id.: XI. Some Considerations on Care of Pretuberculous Children. A. W. Rowe, Mary McManus and Dorothy E. Gallivan, Boston.—p. 560.
Generalized Subcutaneous Emphysema Secondary to Pathologic Fracture of Rib in Advanced Pulmonary Tuberculosis: Report of Case Together with Case Report with Treatment by J. N. Nichols. C. C. Browning, Los Angeles.—p. 571.

Oleothorax.—Matson calls attention to the fact that oleothorax therapy, although closely related to pneumothorax therapy, is a comparatively recent method of treatment and therefore lacks the test of time. Oleothorax therapy requires far more technical skill, keener judgment in the selection of material, and much more careful observation of cases than is required in pneumothorax therapy. Oleothorax therapy is indicated in the course of pneumothorax therapy under the following conditions: (1) as a disinfection oleothorax; (2) to inhibit the expansion of the lung in a threatened early obliterative pneumothorax, and (3) as a compression oleothorax to reestablish collapse, or for the purpose of collapsing rigid-wall cavities in which an intrapleural pneumolysis is impossible. Two types of oil are used, mineral and vegetable, to which aromatized oil is added in a strength of from 1 to 10 per cent. Mineral oil is less absorbable and less irritating than a vegetable oil. A mineral oil is recommended in order to inhibit expansion of the lung or for compression purposes. A vegetable oil is preferable in the toxic, mixed-infection empyemas, because its rapidity of absorption permits a penetrating action of the aromatized oil. It also possesses great nutritive value. Aromatized oil, in a strength of 5 per cent, is capable of killing the tubercle bacillus and is therefore recommended in the tuberculous empyemas. In the mixed-infection empyemas it should be used in a strength of 10 per cent, since weaker solutions are not able to destroy mixed-infection microorganisms. The fundamental principles of a disinfection oleothorax are (1) complete evacuation of the pus, (2) thorough cleansing of the pleural cavity, and (3) a disinfection oil-bath of the entire serosa. Oleothorax is not justified in the treatment of an ordinary pneumothorax empyema unless it tends to chronicity and toxicity. Any substance, even air, when introduced into the pleural cavity, is likely to act as an irritant to which the pleura responds with an exudate formation. For the reason mentioned, oleothorax therapy is not intended to supplant pneumothorax therapy, and it should be employed only when it is evident that a pneumothorax cannot serve its purpose. Oleothorax therapy is not recommended for the treatment of the ordinary serofibrinous exudates, which are well tolerated, for the reason that the oil may produce an inflammatory reaction, thus reawakening the exudative activities of the pleura. In the absence of a purulent exudate, one should never attempt an oil blockade of the pleural cavity without first having tested the sensitiveness of the pleura to oil. In converting a pneumothorax into an oleothorax, one should be careful not to disturb the intrapleural pressure. This is accomplished by injecting the desired quantity of oil and the aspiration of air in units of 20 cc. Before a compression oleothorax is established, the pleura should be prepared for higher oil pressure by preceding increased high air pressures. There is grave danger of lung perforation when a compression oleothorax is maintained under high pressure. Pleuropulmonary perforations are almost invariably due to progressive lesions in the lung cortex or pleura which ulcerate into the pleural cavity. The apparent increased incidence of pleuropulmonary perforation in patients undergoing oleothorax therapy is due to the fact that more cases are revealed by the oil. The presence of an unaccountable, gradual elevation of temperature demands exploration of the oleothorax cavity.

End-Treatment of Artificial Pneumothorax.—Dundee believes that in many cases the artificial pneumothorax treatment of pulmonary tuberculosis can be terminated more satisfactorily at home than at a sanatorium, because the reexpanding lung is best tested when the patient is in a normal environment and carrying on his normal work. The description and the end-treatment of certain different types of artificial pneumothorax are presented. In two types, phrenic avulsion, in a new capacity, is advocated to help obliterate the remaining pleural space, to prevent undue stretching of pulmonary scars and to diminish mediastinal retraction. Four cases are cited. All of these cases show a highly satisfactory response. The term "inner selective collapse" is used to describe a collapse in which the normal area of the lung is allowed to reexpand only 80 per cent. This method is recommended as preferable to "selective collapse" when the normal area of the lung is allowed to reexpand completely. The author condemns the practice of allowing moderate to large amounts of fluid to remain in the pleural cavity for prolonged periods, because such a procedure eventually tends to limit seriously the reexpansion of the lung, as it usually increases pleural thickening, pulmonary fibrosis and atelectasis. The benefits gained by allowing moderate to large amounts of oil to remain for a long time in the pleural cavity must be carefully weighed, as here also there is danger of excessive formation of pulmonary fibrosis and atelectasis.

Accessory Roots in Phrenic Exeresis.—Fisher analyzes a recent series of phrenicectomies, accompanied by careful search for accessory phrenics, with regard to the value of this procedure. In thirty-six phrenic exereses, one or more accessories were found in twenty-two cases, or 60 per cent. Five had multiple accessories, four being the greatest number found in any given case. In eight an accessory accompanying the nerve to the subclavius was found and resected. In one case a double phrenic was present, the two being of equal caliber, crossing the scalenus anticus and passing beneath the clavicle without uniting. Before exeresis of the main stem, resection of all accessory phrenic roots passing separately beneath the clavicle is suggested, as an aid to avulsion and as an additional safeguard against injury to the subclavian vessels. In the author's series, twenty-four phrenic nerves, or 66⅔ per cent, were completely avulsed by this method, the greatest length being 44 cm. In only one instance was less than 10 cm. obtained, in a patient who had been operated on a year previously in another institution without securing permanent paralysis; dense scar tissue rendered avulsion out of the question at the time of reoperation, although resection of an undoubted phrenic produced immediate immobilization and elevation of the hemidiaphragm. An appreciably larger incision is not ordinarily required in order to permit a search for accessories, although somewhat more thorough dissection of the deep structures and a little longer time are obviously necessary. In all the cases in the series, paralysis and elevation of the hemidiaphragm resulted.

Pulmonary Tuberculosis Simulating Chronic Adhesive Pleurisy.—According to Packard, pulmonary lesions alone may give all the physical and roentgenologic signs of an extensive adhesive pleurisy. Only by testing the pleural "space" with needle and manometer is it possible to tell whether there is pleural symphysis or not. Patients who present the physical and roentgenologic changes associated with an organized pleurisy should not be denied an attempt at artificial pneumothorax, if such therapy is clinically indicated. The author believes that artificial pneumothorax should be attempted before thoracoplastic operations.

Blood Sedimentation Tests.—Spector and Muether consider that the Rourke method is the most accurate blood sedimentation method yet devised for studying clinical as well as pathologic activity, and is superior to the thermometer or the total leukocyte count in this regard. The Cutler method is a practical method if the cell volume is within normal limits. The tests are not specific, as the sedimentation is rapid in other diseases, and do not give any information as to the extent of disease, except perhaps in a general way. However, they are of great aid in prognosis, and, diagnostically, in the sense that they detect infection. The modified Arneth method is just as sensitive in detecting early infection as any sedimentation test yet introduced. It is not as time consuming as either the Rourke or the Cutler method. The Schilling method appears to be inferior to the Rourke sedimentation test and the Arneth test. However, it throws more light on the question of resistance of the patient. The author's observations seem to suggest that a combination of the modified Arneth and the Schilling tests would give more information as to activity of the disease, prognosis, and resistance of the individual, than any of the sedimentation tests yet introduced.

Annals of Medical History, New York

4: 109-218 (March) 1932

Life and Times of Dr. William Harvey. W. Herringham, Hampstead, England.—p. 109.
Refutation of Ilberg as to Date of Galen's Birth. J. Walsh, Philadelphia.—p. 126.
Raymond Vieussens and His Treatise on the Heart. R. H. Major, Kansas City, Mo.—p. 147.
Leonardo da Vinci as Physiologist. Leona Baumgartner, New Haven, Conn.—p. 155.
John Locke: Physician and Philosopher. J. H. Dempster, Detroit.—p. 172.
Origin of University of Bologna. G. Franchini, Modena, Italy.—p. 187.
Historical Position of Coccidioides Immitis Among Pathogenic Fungi of Skin. D. W. Montgomery, San Francisco.—p. 199.
Obstetrics in Mexico Prior to 1600. N. van Patten, San Francisco.—p. 203.

Annals of Surgery, Philadelphia

95: 481-640 (April) 1932

History of Thyroid Surgery. C. F. Hegner, Denver.—p. 481.
*Thyroiditis. H. M. Clute and F. H. Lahey, Boston.—p. 493.
Nodular Goiter. J. W. Hinton, New York.—p. 499.
Lingual Thyroid. H. F. Ulrich, Philadelphia.—p. 503.
*Cardiac Features of Goiter: Especial Reference to Operation. J. deJ. Pemberton and F. A. Willius, Rochester, Minn.—p. 508.
*Use of Potassium Iodide in Hyperthyroidism. C. H. Frazier, Philadelphia.—p. 517.
Simplified Technic in Thyroidectomy. A. W. Hoaglund, Minneapolis.—p. 525.
How Much Thyroid Tissue Should be Removed in Toxic Goiter? F. H. Lahey, Boston.—p. 529.
*Thyroid Crisis. E. I. Greene and J. M. Greene, Chicago.—p. 537.
Malignant Tumors and Tumor-Like Growths of Thymic Region. D. Symmers, New York.—p. 544.
Suturing Wounds of Heart. D. C. Elkin, Atlanta, Ga.—p. 573.
*Effect of Arteriovenous Aneurysms on Heart: Report of Case Studied by Professor Rudolph Matas, Dr. George Herrmann and the Author. M. R. Reid, Cincinnati.—p. 578.
*Cancer of Colon and Rectum: Personal Experiences from 1892 to 1932. J. C. Bloodgood, Baltimore.—p. 590.

Thyroiditis.—Clute and Lahey state that acute thyroiditis rarely occurs as a serious prostrating condition. It occasionally progresses to abscess formation and requires adequate exposure and adequate drainage. Syphilitic thyroiditis occurs as a diffuse thyroiditis or as a nodular gummatous thyroiditis. It is cured by antisyphilitic treatment. Tuberculous thyroiditis is found occasionally on microscopic examination of thyroid tissue. It has little clinical importance. Chronic thyroiditis frequently produces considerable constriction of the trachea with pressure symptoms and requires surgical relief. An operation such as removal of the isthmus relieves the constriction and does not produce myxedema. Myxedema is particularly apt to follow operations on the thyroid for thyroiditis.

Cardiac Features of Goiter.—Pemberton and Willius stress certain principles which in their experience have proved of definite value in the operative treatment of goiter in persons with cardiac disturbances. Owing to the fact that the margin of safety in many of the cases is exceedingly narrow, as sometimes the slightest mishap will mean the difference between success and failure, the need for the greatest possible care in every phase of the operation is obviously indicated. In the selection of the anesthetic and the method of its administration there are two considerations of extreme importance: 1. Since all the patients are more or less debilitated and, therefore, particularly susceptible to pulmonary infection, the type of anesthesia which is least likely to contribute to this complication should be chosen, and, unquestionably, prolonged anesthesia by inhalation should be avoided. 2. The anesthesia should be such that the patient can be awakened, in a reasonable state of comfort, after resection of the first lobe, in order that the functional integrity of the inferior laryngeal nerve can be determined. The value of this is obvious, and in the authors' opinion it is the most important single step in the operation. It has been their experience that combined anesthesia, namely, infiltration with procaine hydrochloride (0.5 per cent), supplemented by nitrous oxide and oxygen by inhalation, most nearly fulfils these requirements. Under this method, the average duration of the administration of gases is from eight to ten minutes. For patients with obstructive dyspnea, local anesthesia is definitely indicated. Not uncommonly, in cases of congestive heart failure, there may be circumstances relating to the condition of the patient or to the difficulties of the operation, such that performance of the operation in stages will materially minimize the hazard. Too often the surgeon is prone to believe that the outcome of an operation is favorably influenced to only a limited degree by any measure instituted after the patient has left the operating room, and it is true that a large proportion of these patients do not require any treatment other than symptomatic measures employed as a routine. However, not uncommonly grave complications develop, such as obstructive dyspnea, hyperthyroid reactions, pulmonary edema and infection, and since the successful treatment of these is dependent on early recognition of impending signs and prompt institution of proper treatment, close supervision by an experienced clinician is indispensable. It is for this type of complication, associated with cyanosis, that treatment by oxygen, preferably in the oxygen chamber or tent, has proved to be of great value.

Use of Potassium Iodide in Hyperthyroidism.—Frazier reports a series of cases of both forms of toxic goiter (hyperplastic toxic goiter and toxic adenoma), which were prepared for operation with potassium iodide. The general improvement noted, as well as the specific improvement in pulse and metabolic rate, paralleled the improvement obtained by compound solution of iodine. The clinical charts of several representative cases are exhibited which graphically show the preoperative response of thyrotoxicosis to potassium iodide. The author concludes from the evidence obtained in a surgical research laboratory that free iodine, to be absorbed, must be converted into an iodide, and from his clinical investigation, that it appears unnecessary to have free iodine "loosely combined," to which quality has been ascribed the effect of the administration of compound solution of iodine on hyperthyroidism.

Thyroid Crisis.—According to the Greenes, thyroid crisis is one of the most serious complications of hyperthyroidism. As a rule this condition occurs in the primary toxic, or exophthalmic, goiter. Thyroid crisis usually occurs in patients known to have hyperthyroidism but in whom no treatment has been sought or in whom inadequate treatment has been instituted. It may occur in individuals in whom there is no suspicion of thyrotoxicosis. A crisis may come on immediately after operation or several days later. Acute hyperthyroidism may be ushered in by physical fatigue, by psychic stimulation or as a result of an intercurrent infection, or may appear after some surgical condition often trivial. Measures not aimed to relieve the hyperthyroidism should be postponed until after thyroidectomy has been performed. Adequate preoperative therapy will in the majority of cases prevent postoperative acute thyroidism. The picture of crisis may appear suddenly with no premonitory manifestations, or make its appearance slowly with definite symptoms. The mechanism whereby a crisis is set into motion is not known. The condition must be recognized early and proper therapy instituted immediately or death will frequently result. Treatment consists of iodine, fluids, dextrose and morphine. After recovery from a crisis, surgical intervention should be done with caution and after one has waited long enough to get the patient in proper physical condition.

Arteriovenous Aneurysms: Effect on Heart.—Reid calls attention to the fact that arteriovenous aneurysms involving large vessels usually affect the heart. The main factor in the causation of the damage to the heart is the increased amount of blood that it has to handle. This results from the quick shunting of a large amount of arterial blood back to the heart. Another factor which is probably of importance is that there results a condition resembling aortic insufficiency, although the lesion may be far removed from the aortic valves. A case of femoral arteriovenous aneurysm, which had been present for seventeen years, is recorded. It illustrates many of the effects of this condition—cardiac hypertrophy and dilatation, Branham's bradycardiac phenomenon, disturbances of blood pressure (Hill and Flack sign), changes in the electrocardiogram, pulsating varicosities, dilated and atrophied proximal artery, capillary pulsation, very adequate collateral circulation, and so on. Excision of the aneurysm relieved completely all cardiac symptoms and caused the heart to return to a normal size. This case strongly supports the teaching of Matas that the heart should be prepared for the complete closure of the fistula by a preliminary period devoted to temporary occlusions of it. Although the abundant collateral circulation reduces to a minimum the danger of peripheral gangrene, the heart should be considered and partially adapted to the great and sudden change that will follow the operation. An intelligent patient who has practiced temporary occlusion of his own fistula is usually quite certain when it can be permanently occluded without causing any cardiac distress.

Cancer of Colon and Rectum.—Bloodgood emphasizes the fact that, in cancer of the colon and rectum, surgeons cannot with justice either to themselves or to the public assume that their responsibility begins with the preoperative preparation. The chief cause of failure to this condition is late intervention. Contributory causes are incomplete preoperative investigation in which the precancerous or cancerous lesion is overlooked by some member of the medical profession and valuable time lost. All physicians are apt to make the mistake of performing an incomplete diagnostic study before operation or an incomplete preöperative preparation. Apparently the least important factor in the failure to cure the majority of cases of cancer of the colon and rectum is the operative skill of the surgeon. This factor may be too large but it cannot be compared with the delay on the part of the patient and the failure to recognize an operable condition on the part of the general practitioner who does not keep up with modern diagnostic methods. Undoubtedly, in cancer of the rectosigmoid colon, surgeons of less experience and skill have too large a mortality. There should be no difficulty for them to recognize these cases clinically and back out either before any operation or after an exploratory laparotomy. In the latter event they can perform preliminary appendicostomy and save the patient much time. The author recommends appendicostomy preliminary to resection of every part of the colon except the right colon when the cecum is removed. His impression is that lateral anastomosis, when possible, is safer than end to end. In tumors of the rectum and rectosigmoid, pathologic studies and final results demonstrate that it is unnecessary for a cure to give the malignant tumor of the colon or rectum wide margins of intestine. The restricted operation should be chosen when possible, if it promises lessening of the operative risk. For the same reason, operation in stages should be chosen and blood transfusion freely employed. One should not wait for symptoms of shock but anticipate the collapse. Also, it should be remembered that the rectal tumor can be properly removed through the sacral route. It is possible to perform an abdominal colostomy if the sacral one is unsatisfactory. Many of the most experienced and best trained diagnosticians often curtail the preoperative diagnosis the moment something definite is found indicating surgical intervention. Many experienced surgeons, before operations on the colon, do not give the patient proper preoperative preparation. If there is obstruction, colostomy is indicated, which can be part of a preoperative diagnosis and preparation, because the obstruction must be relieved. The author recommends appendicostomy without exploration to determine the position of the tumor unless there are definite symptoms indicating the necessity of further exploration.

Canadian Medical Association Journal, Montreal

26: 393-518 (April) 1932

*Observations on Bone Formation in Abdominal Wall Following Transplantation of Mucous Membrane of Urinary Bladder: Preliminary Report. A. C. Abbott and A. M. Goodwin, Winnipeg, Manit.—p. 393.
*Liver Extract in Treatment of Pernicious Anemia. E. W. McHenry, D. L. MacLean and C. H. Best, Toronto.—p. 397.
Hypothalamic Mechanisms. J. Beattie, Montreal.—p. 400.
*Coronary Thrombosis. J. A. Oille, Toronto.—p. 405.
*Some Unusual Manifestations of Insulin Reaction. J. Feigenbaum, Montreal.—p. 410.
Nembutal: An Antidote. D. E. Cameron and R. McCulloch, Brandon, Manit.—p. 413.
Hypothyroidism. G. F. Strong, Vancouver, B. C.—p. 415.
Intestinal Obstruction. G. Miller, Montreal.—p. 420.
Intestinal Obstruction Caused by Normal Pregnancy. M. Blair, Vancouver, B. C.—p. 426.
*Treatment of Distention Following Abdominal Operation in Children. W. L. Denney, London, Ont.—p. 430.
*Intracapsular Fractures of Neck of Femur. D. B. Phemister, Chicago.—p. 431.
Use of Iodized Oil by Sanatorium Physician in Diagnosis of Bronchial Affections. S. Pritchard, Battle Creek, Mich.—p. 433.
Roentgen-Ray Diagnosis of Genito-Urinary Tract. W. L. Ritchie, Montreal.—p. 435.
Classification of Râles. H. M. Kinghorn, Saranac Lake, N. Y.—p. 438.
General Significance of Visual Tests. E. Jackson, Denver.—p. 445.
Undulant Fever in British Columbia. H. W. Hill, Vancouver, B. C.—p. 449.
Mental Automatism, Provocative Factor of Chronic Hallucinatory Psychoses. Jean Saucier, Montreal.—p. 452.

Bone Formation in Abdominal Wall Following Transplantation of Mucous Membrane of Urinary Bladder.—Abbott and Goodwin report the case of a man who developed an extensive sheet of bone in his abdominal scar following a two-stage prostatectomy. They also report the results of an investigation to determine the type of bony growth produced when the mucous membrane of the bladder or all its layers are transplanted into the abdominal wall. Up to the present time they have transplanted mucous membrane or the full thickness of the bladder wall into the layers of the abdominal wall in twenty-six dogs. It was found that, following the transplantation of the mucous membrane of a dog's bladder into the connective tissues of striated muscle, fascia and fatty fibrous connective tissue, an epithelium-lined cyst is formed. On about the twentieth day, bone makes its appearance next to the newly formed epithelium and reaches its highest point of development in about sixty days. The newly formed bone is strictly limited to the newly formed epithelium and never infiltrates the surrounding tissues. This in no way resembles the bony growths that occur in abdominal scars and heretofore have been classified as myositis ossificans. These are not cystic and are frequently of large size. At the present time there is no evidence that mucous membrane of the human bladder when transplanted into the abdominal wall will produce bone.

Liver Extract in Treatment of Pernicious Anemia.—McHenry and his associates present the results obtained when extracts prepared in the Connaught Laboratories of the University of Toronto were employed in a series of forty-three persons with pernicious anemia. The extract produced by this laboratory has been made by a standard method since April, 1928. The procedure employed is a modification of that developed by the Harvard group, and is as follows: Fresh beef liver is minced and extracted with water adjusted with sulphuric acid to secure p_H 5.0. The mixture is heated to 60 C., to coagulate the albumin, and filtered. The filtrate is concentrated in a vacuum still at low temperature. The concentrate is poured into sufficient alcohol to give a concentration of 55 per cent alcohol. A precipitate, shown by tests to be inactive, is removed by filtration. Sufficient alcohol is then added to the filtrate to give a concentration of 95 per cent. The precipitate thus produced is dried in a vacuum oven and pulverized. There would seem to be little chance of such an extract changing in potency from batch to batch, unless there is some seasonal or other variation in the individual livers. There is at present no evidence of any such change, and with the large number of livers used in each batch there would seem to be little likelihood of any such individual variation being great enough to affect the potency. Every effort has been made to standardize the procedures used in the preparation of this material and to prepare for distribution a homogeneous mixture of numerous individual lots. From this point of view, therefore, there is no reason to suspect any change in potency between the various lots of extract. During the year 1927, liver extract was prepared in these laboratories and distributed gratuitously. Since that time sufficient material for one month's treatment has been made available without charge to physicians who have suitable patients under their care and who are willing to cooperate in the testing. In cases in which it is not convenient for the physician to make reticulocyte counts, slides stained with brilliant cresyl blue are provided. Blood smears made on these slides by the physician before and every second day for two weeks after the beginning of treatment are returned to the laboratory, where the reticulocytes are counted. Hemoglobin determinations and red cell counts are made before and at regular intervals after treatment is started. In spite of numerous attempts to develop other procedures, the clinical test is the only reliable method at present available for determining the potency of the extract. Evidence of the constant potency of this extract is available from the results obtained in the group of forty-three patients on whom were tested various lots.

Coronary Thrombosis.—Oille emphasizes the fact that coronary thrombosis must be differentiated from angina pectoris. The pain of angina is less severe. It is frequently described as only a tightness, an uncomfortable feeling, or a compression or constriction in the chest on exertion or excitement. It lasts only a few minutes, rarely as long as half an hour. The pain of coronary thrombosis, on the other hand, tends to occur lower down the sternum, is more often bilateral, and is more widespread than that of angina. It is usually much more severe and lasts for hours or days instead of minutes. Patients with angina stop and stand still in the attack, while some patients with coronary thrombosis are restless and cannot remain in bed. In cases of angina the following distinctive features of coronary thrombosis are always absent—severe dyspnea, changes in pulse rate and blood pressure or heart sounds, vomiting, shock, signs of failing circulation, fever and leukocytosis. Electrocardiographic changes occur in angina, but they are temporary, lasting only a few minutes. The importance of distinguishing coronary thrombosis from angina is illustrated by the fact that the operative mortality in coronary thrombosis is six times as high as it is in angina pectoris.

Unusual Manifestations of Insulin Reaction.—Feigenbaum presents a case that demonstrates some unusual neuropsychiatric manifestations of an insulin reaction. Clinical and experimental evidence is offered to indicate that the nervous system is primarily involved in the symptomatology of an insulin reaction. An insulin reaction is not always accompanied by hypoglycemia, and it does not always respond favorably at once to the administration of dextrose. The dose of insulin administered usually determines the duration of the insulin reaction. The prognosis of a severe insulin reaction is good if the patient receives adequate treatment. The underlying mechanism of an insulin reaction still remains obscure.

Distention Following Abdominal Operation in Children.—Denney states that, by the use of diathermy, troublesome distention following abdominal operations may be controlled. This procedure is most useful in those cases in which, following rupture of the appendix, the distention and toxic state become pronounced and dangerous. There is no difficulty in its management. It causes the patient no physical or mental discomfort, even acting as a soporific. It can be used as often as is necessary, and adds no extra burden to the circulatory system, as may be the case when hypodermic medication is used. In those cases in which toxicity is marked, a saline-dextrose solution intravenously may be of assistance in overcoming the toxemia and increasing peristalsis.

Intracapsular Fractures of Neck of Femur.—According to Phemister, after intracapsular fracture of the neck of the femur the proximal fragment, which consists largely of head, may remain alive, receiving its nourishment through the internal portion of the capsule or round ligament, or it may die from interruption of the circulation. The percentage of cases in which it becomes necrotic is not definitely known, because of lack of studies on material derived from necropsy and operation and because of failure to utilize the roentgen rays in the recognition of necrotic heads. However, it is known that it dies in a considerable percentage of cases. In either event the fracture may unite or remain ununited, so that there is one of four conditions with which to deal: (1) a live head with union, (2) a live head with nonunion, (3) a dead head with union, and (4) a dead head with nonunion. As a result of the utilization of the knowledge of the pathology of these cases in roentgen interpretation it is usually possible to say after the lapse of several weeks from a study of roentgenograms whether the head has died or remained alive. It has been found that there is more or less creeping substitution of the dead bone by new bone. In the act of replacement of the dead head by living bone in the cases in which nonunion has resulted, new bone is formed from the invading connective tissue by metaplasia of the fibrous into bony elements. The roentgen determination of whether the head is alive or necrotic is based on the difference in density changes in the two conditions. If the head remains alive it shows a reduction in density as a result of atrophy of disuse during the period of treatment, and subsequently, if function is not restored to normal. If the head dies, it of course cannot undergo atrophy of disuse; and density changes result only from bony absorption by invading connective tissue and replacement by new bone. Absorptive and reconstructive changes in the necrotic head usually come about much more slowly and unevenly than is the case of atrophy of the living head. Consequently, in most cases it is possible to determine from roentgenograms taken after three months has elapsed whether the head has died or remains alive.

Canadian Public Health Journal, Toronto

23: 153-202 (April) 1932

Trends in Bathing Beach and Swimming Pool Sanitation. F. R. Shaw. —p. 153.
Studies on B. Dysenteriae Sonne. Marion M. Johnston and Mildred J. Kaake, Toronto.—p. 159.
Need for Uniformity in Vital Statistics. H. B. French —p. 167.
Observations on Rural Public Health Work in Ontario. D. R. McClenahan, Hamilton, Ont.—p. 170.
Statistics in Field of Mental Hygiene. H. B. Spaulding, New York. —p. 174.
Maternal Mortality: General Survey. J. T. Phair.—p. 179.

Illinois Medical Journal, Chicago

61: 269-360 (April) 1932

*Importance of Quantitative Diets in Diabetes and Obesity. W. H. Nadler, Chicago.—p. 311.
Diagnosis and Treatment of Precancerous Lesions of Breast. M. Cutler, Chicago.—p. 313.
*Surgery Versus Radiation in Benign Uterine Hemorrhage. E. H. Ochsner, Chicago, and J. K. Sullivan, Cleveland.—p. 316.
Oral Vaccination. J. G. Finder and J. Simons, Chicago.—p. 321.
Doctors Who Have Achieved Fame in Other Fields Than Medicine. A. Levinson, Chicago.—p. 329.
Rupture of Spinatus Tendons and Capsule, Repaired by New Operation. E. B. Fowler, Evanston.—p. 332.
Chronic Seminal Vesiculitis. H. C. Rolnick, Chicago.—p. 334.
Fibrolipomatosis of Kidney: Report of Case. H. L. Kretschmer, Chicago, and L. E. Pierson, Sioux City, Iowa.—p. 336.
Conservative Use of "Radium Puncture." F. E. Simpson and G. R. Dunlevy, Chicago.—p. 341.
Commercial Roentgen Laboratory: Some Good Reasons Why They Should Not be Tolerated or Patronized. I. S. Trostler, Chicago.—p. 343.
*Use of Thyroid and Suprarenal in Diatheses of Infancy (Clinical Study). O. Barbour, Peoria.—p. 345.
Gunshot Wound of Lower Third of Humerus with Musculospiral Paralysis: Bone Defect Repaired by Interposition of Cortical Fragment Without Use of Foreign Material. G. S. van Alstine, Chicago.—p. 355.

Quantitative Diets in Diabetes and Obesity.—According to Nadler, the conversion of the daily food allowance as expressed in grams of protein, carbohydrate and fat into food portions and their division into meals seems to be the chief obstacle to the more widespread use of quantitative diets. This relatively simple procedure has until recently been taught in few medical schools; even in hospitals it is usually left entirely to the dietitian, with the result that many clinicians have had little opportunity of calculating diets. Experience in teaching medical students has proved that this information is easily acquired by actual practice. All that is required is a table of food values, a food scale (marked in grams) and practice. Analyses of most of the foodstuffs used in this country can be obtained by writing to the Bureau of Records, Department of Agriculture, Washington, D. C., for Bulletin 28, by Atwater and Bryant, and enclosing 10 cents in coin. The simpler tables of food values prepared by Joslin and found in his invaluable Diabetic Manual serve admirably; in particular, one should memorize or have at hand a list similar to Joslin's table of caloric values for common foods as a basis for rapid calculation.

Surgery Versus Irradiation in Benign Uterine Hemorrhage.—From a review of the recent literature on the subject, Ochsner and Sullivan have come to the conclusion that there is a gradual swing toward surgery and away from irradiation in the treatment of these conditions. It would seem evident that when the number and frequency of complications are taken into consideration and all the contraindications listed by the various authors are scrupulously observed, the number of cases of benign uterine hemorrhage in which irradiation is indicated is very limited. The authors emphasize again the possibility of a persisting anemia and the danger of severe nervous disturbance following irradiation and the advantages of a modification (packing of the uterine cavity for two minutes with plain sterile gauze saturated with solution of formaldehyde-U. S. P.) of the Hill treatment for premenopausal bleeding.

Use of Thyroid and Suprarenal in Diatheses of Infancy.—According to Barbour, there is much clinical and laboratory evidence that the constitutional diatheses of infancy are manifestations of a neurochemical imbalance of the congenitally unstable physiologic activities of the infant. There is some pathologic and clinical evidence that this neurochemical imbalance is the result of a disturbed equilibrium between the secretions of the endocrine glands. Therapeutic results presented by the author for confirmation indicate that the endocrine dysfunction lies primarily in the thyroid and suprarenals.

Iowa State Medical Society Journal, Des Moines

22: 159-204 (April) 1932

Chronic Suppuration of Middle Ear. W. J. Foster, Cedar Rapids.—p. 167.
Concealed Gastro-Intestinal Hemorrhage. J. M. Berkman, Rochester, Minn.—p. 170.
Serious Complications Following Simple Antromeatal Operation: Case Reports. S. D. Maiden, Council Bluffs.—p. 172.
Coronary Thrombosis with Cardiac Infarction. H. L. Smith, Rochester, Minn.—p. 176.
Our Poor Relations. S. G. Hands, Davenport.—p. 178.

Journal of Nervous and Mental Disease, New York

75: 361-472 (April) 1932

Problem of Traumatic Parkinsonism. A. E. Kulkov, Moscow, U. S. S. R. —p. 361.
*Plantar Reflex, Its Signification, Methods of Its Examination and Causes of Some Diagnostic Errors. T. Dosužkov, Czechoslovakia.—p. 374.
Body Weight in One Hundred and Thirty-Six Individuals Diagnosed as Essential Epileptics. S. M. Weingrow, New York.—p. 384.
Cerebral Changes in Pneumococcus Septicemia: Report of Case with Necropsy. H. M. Zimmerman and H. Yannet, New Haven, Conn. —p. 386.

Plantar Reflex.—Dosužkov believes that with regard to the plantar reflex there are two kinds of errors: those the result of a wrong examination and those the result of an incorrect appreciation of the rightly obtained facts. The anomaly of the methods consists in the following: (1) in an incorrect position of the patient during the examination, namely, with the flexed knee joint (when a plantar flexion of the toes displays itself even in cases of lesions of the pyramidal system); (2) in the using of an unsuitable tool for examination (mostly the handle of a neurologic hammer), whereby the positive Puusepp's phenomenon appears also in the healthy persons, and (3) in the examination of the reflex from the part of the foot-sole below the toes (whereby the positive Babinski phenomenon appears in the healthy person, too). The cause of errors in appreciating the results of the examination consists in the ignoring of the "physiologic Babinski," "peripheral Babinski," "pseudo-Babinski," "pseudo-Puusepp" and "pseudopathologic Babinski."

Journal of Thoracic Surgery, St. Louis

1: 339-450 (April) 1932

Study of Bronchial, Pulmonary and Lymphatic Circulations of Lung Under Various Pathologic Conditions Experimentally Produced. Mary E. Mathes, E. Holman and F. L. Reichert, San Francisco.—p. 339.
*Internal Drainage of Lung Abscess by Extrapleural Compression. F. S. Dolley, Los Angeles.—p. 363.
Bronchial Stenosis. L. Eloesser, San Francisco.—p. 373.
Bronchiectasis. H. Ballon, J. J. Singer and E. A. Graham, St. Louis. —p. 397.
*Closed Endobronchial Anesthesia in Thoracic Surgery: Preliminary Report. J. W. Gale and R. M. Waters, Madison, Wis.—p. 432.
*Multiposition Bed for Continuous Postural Drainage. J. J. Singer, St. Louis.—p. 438.

Internal Drainage of Lung Abscess.—Dolley calls attention to the fact that it is chiefly among the cases of lung abscess in which the pneumonitis surrounding the abscess is still extensive or continues to extend that one finds the great percentage of operative deaths, and it is particularly for this type that he offers the following procedure: Its principle is based on continuous extrapleural pulmonary compression against the involved area in a direct line toward the draining bronchi to aid collapse and drainage of the lung tissue surrounding the area of liquefaction and necrosis without decreasing to any appreciable extent the intrathoracic coughing efficiency. The technic is as follows: The location of the abscess with its surrounding pneumonitis is determined by roentgen examination; the direction of the lobar bronchus draining the suppurative area is determined by bronchoscopy. A site in a direct line with the bronchus draining the involved area is located at the point where the abscess is nearest the lung surface. Under local anesthesia, short portions of three or even four ribs are excised together with their intercostal bundles, leaving for the floor of the wound the parietal pleura clear of muscle, vessels and nerves except for the periosteums of the removed ribs, which are left in situ. The parietal pleura is not freed beyond the limits of the wound, since too great collapse may interfere with bronchial drainage by the falling together of the smaller draining bronchi already softened by inflammation. The wound is packed very tightly with continuous five-inch dry gauze and is closed without drainage. The area deprived of rib sections is strapped tightly with adhesive plaster in order to restore as nearly as possible a solid chest wall or counterpressure in coughing. The wound is not opened for from fourteen to eighteen days unless infection demands it. It is then opened widely and the packing is removed. It is at once repacked with gauze saturated in some antiseptic solution and left wide open. The packing is changed every two days until rib regeneration has firmly occurred with the ribs in the compressed position. If the collapse obtained by this procedure is insufficient, at a second stage another adjoining area is deprived of its ribs to obtain further collapse, and still another stage if deemed advisable. Gauze compression, however, is limited to its original site. After the primary compression operation, further procedures are in the nature of well circumscribed thoracoplasties, and their number depends on the area required for collapse to produce continuous improvement to a cure.

Closed Endobronchial Anesthesia.—According to Gale and Waters, closed endobronchial anesthesia has been employed in several experimental animals for the removal of different lobes of the lung, and in one patient for the removal of a mediastinal tumor. Artificial respiration may be maintained in the one lung with perfect control of its respiration and minute-volume respiratory exchange. Intrapulmonary pressure is measured by a side tube to a manometer. The incorporation of the closed carbon dioxide absorption technic assures a warm moist anesthetic atmosphere at all times. The shock usually encountered on the sudden creation of an open pneumothorax has been slight. This has been demonstrated by the blood pressure and pulse rate remaining constant. The irregular and violent respiratory movements, so often seen, have been replaced by slow, regular and deep breathing. Exposure is simple for the surgeon because the lung in the operative field is immobile. Chances of infection are reduced because a sucking wound has been entirely eliminated. Little chance exists for infected secretions to be squeezed into the trachea because the bronchus is blocked. Although the method has been employed in a series of cases too small from which to draw conclusions, the evidence so far obtained gives promise that the closed endobronchial type of anesthesia is a most practical method to employ in intrathoracic operations in which the pleural cavity must be opened.

Multiposition Bed for Continuous Postural Drainage.—The advantages of the multiposition bed described by Singer are as follows: 1. Almost any desired position for use in postural drainage is obtained by little effort on the part of the operator and no effort at all on the part of the patient. 2. It permits one to carry out either intermittent or continuous postural drainage. 3. A regular standard bed is used with the fittings, which make them inexpensive.

Kansas Medical Society Journal, Topeka

33: 111-148 (April) 1932

Methods of Handling Patients at State Sanatorium. C. F. Taylor, Norton.—p. 111.
Some Problems in Health Education. E. F. Morris, Hays.—p. 115.
Vincent's Infection: Analysis of Twenty-Six Hospitalized Cases. C. A. Hellwig, Wichita.—p. 120.
Modern Functions of County Medical Society. W. J. Burns, Detroit. —p. 125.

Medical Journal and Record, New York

135: 313-364 (April 6) 1932

Clinical Aspects of Sporadic Hepatitis: Nonleptospiral, Nonenteroid, Infectious Jaundice. N. Toomey, Palmyra, Mo.—p. 313.
Acute Yellow Atrophy of Liver: Acute Necrosis of Liver. S. Weiss, New York.—p. 316.
Is Surgical Restoration of the Aged Face Justified? Indications: Method of Repair: End-Results. J. W. Maliniak, New York.—p. 321.
History as an Aid in Diagnosis. H. Hallarman, New York.—p. 324.
Vitamins: Their Rôle in Prevention and Treatment of Disease. H. F. Langhorst, Elmhurst, Ill.—p. 326.
Macrocosm and Microcosm. H. Goodman, New York.—p. 329.

Minnesota Medicine, St. Paul

15: 217-294 (April) 1932

Following Up Sanatorium Patients. G. T. Palmer, Springfield, Ill. —p. 217.
Outline of Some Advantages and Disadvantages of Various Agents Used in Anesthesia. J. S. Lundy, Rochester.—p. 219.
Pocket Flap: Safest Method for Extraction of Senile Cataract. C. N. Spratt, Minneapolis.—p. 221.
Laryngeal Emergencies in Infants and Children. K. A. Phelps, Minneapolis.—p. 227.
Spontaneous Pneumothorax. W. H. Long, Fargo, N. D.—p. 234.
Heart Disease in Children. J. F. Borg, St. Paul.—p. 237.
Treatment of Rickets. O. W. Rowe, Duluth.—p. 244.
*Relief of Pain in Advanced Tuberculosis of Larynx by Means of Surgery. M. Nordland, Minneapolis.—p. 249.
*Mucocele of Appendix: Report of Case. C. Mayo 2d and J. U. Fauster, Jr., Rochester.—p. 254.

Tuberculosis of Larynx.—Nordland believes that resection of the superior laryngeal nerve is the surest method of removing dysphagia in patients with laryngeal tuberculosis. The operation presents no technical difficulties and does not cause any severe secondary phenomena. It can be done primarily on both sides and is easily borne by the patient. It has a definite symptomatic value and may have a curative possibility. The operation is suitable for other painful inflammatory processes in the larynx.

Mucocele of Appendix.—Mayo and Fauster review seventy cases of mucocele of the appendix. In their clinical analysis, no definite diagnostic point was revealed. The most significant facts are the history of distress and palpable mass in the right lower abdominal quadrant. With this present, mucocele of the appendix should always be considered. In uncomplicated cases, the condition is relatively benign. Although mucocele may be a primary type of malignant tumor, its growth is exceedingly slow, and complicating factors are rare. Rupture of larger mucoceles frequently results in the formation of pseudomyxoma peritonaei. The treatment in the uncomplicated case is appendectomy, and the prognosis is good.

Missouri State M. Assn. Journal, St. Louis

29: 155-192 (April) 1932

Functions and Activities of Medical Defense Committee of Missouri State Medical Association. C. E. Hyndman, St. Louis.—p. 155.
Encephalitis Following Vaccination Against Smallpox and Coincident with Attack of Chickenpox: Report of Case. C. A. W. Zimmermann and J. H. Cochran, Cape Girardeau.—p. 158.
Misguided Philanthropy. G. H. Mathae, St. Louis.—p. 160.
*Mineral Oil, Its Use and Abuse as Laxative. S. E. Newman and G. E. Gruenfeld, St. Louis.—p. 162.
Argument for Better Prenatal Care. W. Stacy, St. Joseph.—p. 164.
Leprosy in Hawaii. G. B. Tuttle, Kalaupapa, Hawaii.—p. 166.

Liquid Petrolatum as a Laxative.—Newman and Gruenfeld call attention to the fact that liquid petrolatum is emulsified in the intestinal canal and thoroughly mixed with the chyme. It constitutes a vehicle for the formed elements of the feces that cannot be absorbed. The therapeutic effect in constipation is brought about by the increase and maintenance of the volume of feces and possibly by a stimulation of the intestinal musculature during the emulsification and mixing of the oil with the chyme, especially in the cecum and ascending colon. Excessive quantities of the oil that cannot be emulsified and incorporated in the chyme are eventually transported into the distal portion of the colon as a liquid accumulation and may provoke peristaltic reactions which upset any therapeutic benefit.

New England Journal of Medicine, Boston

206: 717-770 (April 7) 1932

*Peptic Ulcer: Its Treatment by Roentgen Ray. E. S. Emery, Jr., Boston.—p. 717.
Colles Fracture. D. J. Duggan, Boston.—p. 721.
Unhappiness and Mental Disease. D. Gregg, Wellesley, Mass.—p. 725.
Micromethod for Determination of Blood Sugar. O. Folin, Boston.—p. 727.
Three Episodes in Medical Education at Middlebury College (1810-1837). F. C. Waite, Cleveland.—p. 729.

Peptic Ulcer.—Emery gives the case histories of six patients with peptic ulcers of the jejunum and two with ulcers of the duodenum that he treated with roentgen rays. The results were satisfactory in four, questionable in two and unsatisfactory in two. In six there was an increase in pain for a week or ten days; the pain then subsided. In four there was a complete remission for a varying period of from six weeks to several months. Two patients continued to have pain, and in one of these a perforation occurred. In all the cases there was a drop in the acid, and temporary achlorhydria developed in four. It was observed that in six patients the amount of pain and acidity roughly paralleled each other. The author believes, as a result of his experiences with these cases, that roentgen therapy may be a useful adjunct to the treatment of peptic ulcer in a small, selected number of patients.

Philippine Journal of Science, Manila

47: 425-570 (April) 1932. Partial Index

Antimosquito Sprays. R. L. Holt and J. H. Kintner, Manila.—p. 433.
Control of Anopheles Minimus Mosquito Larvae in Philippines by Stranding and Flushing: First Report. P. F. Russell, Manila.—p. 439.
Blood Groups in Philippine Monkeys. H. Hirano, Manila.—p. 449.
Experimental Inquiry into Possibility of Transmission of Yaws by Leeches. I. Miyao, Manila.—p. 463.
Composition of Philippine Rice Oil (Hambas Variety). A. O. Cruz, A. P. West and N. B. Mendiola, Manila.—p. 487.
Observations on Life Histories of Euparyphium Murinum Tubangui, 1931, and Echinostoma Revolutum (Froelich, 1802), (Trematoda). M. A. Tubangui, Manila.—p. 497.

Southern Medical Journal, Birmingham, Ala.

25: 325-440 (April) 1932

Endometriosis. W. H. Goodwin, University, Va.—p. 325.
Pathologic Observations in Eclampsia. R. A. Ross, Durham, N. C.—p. 333.
Forty Years' Experience in Operating on Bladder Neck. E. L. Keyes, New York.—p. 336.
Transurethral Correction of Prostatic Obstruction. T. M. Davis, Charlotte, N. C.—p. 345.
Open Reduction of Congenital Dislocation of Hip. F. C. Kidner, Detroit.—p. 350.
Acute Osteomyelitis. E. D. Fenner, New Orleans.—p. 355.
Ocular Manifestations in Cranial and Intracranial Injuries. A. O. Pfingst, Louisville, Ky.—p. 357.
Malignancy of Upper Maxilla. H. Dupuy, New Orleans.—p. 362.
Purulent Pericarditis: Report of Seven Cases. R. J. White, Fort Worth, Texas.—p. 364.
Suture Material for Hernia Repair, with Especial Reference to Preserved Fascia Strips. A. R. Koontz, Baltimore.—p. 372.
Cancer of Large Bowel. J. L. Jelks, Memphis, Tenn.—p. 380.
Carbon Dioxide in Treatment of Acute Bronchitis and Early Pneumonia. J. F. Alison, Selma, Ala.—p. 386.
Ganglion-Roentgen-Ray Study and Treatment. H. Hailey, Atlanta, Ga.—p. 389.
Division of Both Phrenic Nerves for Relief of Spasm of Diaphragm Following Encephalitis. R. Greene, Jacksonville, Fla.—p. 392.
Secondary Anemias and Their Treatment. C. W. Dowden, Louisville, Ky.—p. 394.
*Copper and Iron Requirements in Infancy. A. P. Bloxsom, Houston, Texas.—p. 401.
*Insulin Fattening: Late Results in Sixty-Three Cases. E. S. Nichol, Miami, Fla.—p. 405.
Diagnosis and Treatment of Diabetic Coma. I. I. Lemann, New Orleans.—p. 411.
*Blastomycosis of Lungs. W. R. Brooksher, Jr., Fort Smith, Ark.—p. 412.
Problem of Human Carrier. J. L. Jones, Louisville, Ky.—p. 416.
Sporadic Hepatitis (Nonleptospiral, Nonenteroid, Infectious Jaundice). N. Toomey, Palmyra, Mo.—p. 423.
Introduction of Medical History into General Medical Curriculum. C. S. Burwell, Nashville, Tenn.—p. 427.
Public Health in General Medical Curriculum. S. Graves, University, Ala.—p. 430.

Copper and Iron Requirements in Infancy.—Bloxsom reports that the administration of copper in conjunction with iron for hemoglobin stimulation to a series of well infants showing a decrease in hemoglobin produced sufficient evidence of its value to make it worth while to report the results as a means of stimulating further study along this line. A series of fifty-seven infants were fed copper and iron daily in the form of copper sulphate and iron and ammonium citrate. This group of fifty-seven infants showed an average increase of from 5 to 15 per cent in hemoglobin over a group of 104 infants not receiving copper and iron. Copper is apparently a necessary element in the nutrition of the human body and must be supplied in sufficient quantities in conjunction with iron to the growing infant. The evidence presented in this study is in apparent accord with the experimental evidence in animals that there is a marked increase in hemoglobin when copper is added to a diet containing iron. The marked increase in hemoglobin response of infants given copper and iron apparently indicates that many infants suffer from a partial deficiency of these necessary elements in their early diets and that a substance rich in these hemoglobin regenerating factors may be of value as a routine addition to the diet after birth.

Insulin Fattening.—Nichol's report includes sixty-three cases, thirteen of which were reported in 1927. Forty-eight patients made satisfactory immediate gain with insulin, ranging from 5 to 30 pounds (11 to 66 Kg.). Of these forty-eight patients, twenty-three maintained their gain three months or less, eight for as long as six months, seven for one year, three for three years, and one for four years. Six cases were not followed. Many patients noted a tonic effect from insulin out of proportion to the gain in weight, making it difficult to tabulate the total effect of treatment.

Blastomycosis of Lungs.—Brooksher is of the opinion that primary fungous infection of the lungs is doubtless more common than is generally suspected. The possibility of such infection should be considered in cases presenting evidence of pulmonary tuberculosis but in which the tubercle bacillus cannot be recovered from the sputum. No characteristic physical, clinical or roentgenologic observations are noted. Further study roentgenologically may indicate in which chests a suspicion of its presence should receive confirmation by bacteriologic procedures.

Surgery, Gynecology and Obstetrics, Chicago

54: 605-732 (April) 1932

*Rôle of Bile in High Intestinal Obstruction. E. B. Benedict, Boston; C. P. Stewart, Pittsburgh, and P. N. Cutner, Edinburgh, Scotland. —p. 605.

*Method for Plastic Reconstruction of Common Bile Duct: Experimental Study. V. L. Schrager, A. C. Ivy and J. E. Morgan, Chicago.—p. 613.

*Observations on Experimental Spinal Anesthesia. L. K. Ferguson and J. P. North, Philadelphia.—p. 621.

Presence of Epithelium in Blood Cysts of Transplanted Ovary. E. S. J. King, Melbourne, Australia.—p. 635.

*Varicose Vein Solutions: Researches in Toxicity, Slough Producing Properties and Bactericidal Action as Related to Phlebitis and Embolism. N. J. Kilbourne, W. Dodson and A. H. Zeiler, Los Angeles.—p. 640.

Changes Which Articular Cartilage of Hip Joint May Undergo. J. V. Santos, Baltimore.—p. 650.

Halban Operation for Genital Prolapse. W. Mestitz, Vienna, Austria. —p. 663.

Osteomyelitis and Compound Fractures of Pelvis: Special Technical Methods to be Employed in Treatment. H. W. Orr, Lincoln, Neb. —p. 673.

*Primary Benign Tumors of Ureter: Review of Literature and Report of Case. M. M. Melicow and H. V. Findlay, New York.—p. 680.

*Considerations of Some Infections and Degenerations of Uterine Cervix. C. H. Mayo, Rochester, Minn.—p. 690.

Prolapse of Uterus: Principles of Its Correction. C. J. Miller, New Orleans.—p. 693.

*Acute Suppurative Pleurisy in Children: Study of One Hundred and Twenty-Three Cases. M. Cohen, New York.—p. 696.

*Maggots in Treatment of Chronic Osteomyelitis, Infected Wounds and Compound Fractures: Analysis Based on Treatment of One Hundred Cases, with Preliminary Report on Isolation and Use of Active Principle. S. K. Livingston, Hines, Ill.—p. 702.

Intraperitonal Herniorrhaphy in Inguinal Hernia. P. Banerjee, Calcutta, India.—p. 706.

Bile in High Intestinal Obstruction.—The results of experiments performed by Benedict and his associates on dogs suggest that, when obstruction of the intestine is so high that no bile can be reabsorbed, benefit is derived from administration of bile below the obstruction. In obstruction well below the bile papilla, in which some reabsorption of bile is possible, there is probably no special advantage to be derived from the exhibition of bile. While these experiments would appear to indicate that a lack of bile in the segment below the obstruction is not a factor of fundamental importance in determining the fatal issue in obstructed dogs, they do not preclude the possibility of benefit being derived from the use of bile in the lower bowel in the human subject suffering from paralytic distention. The composition of bile with respect to the bile salts and the cholesterol content is apparently not altered by intestinal obstruction. When the chloride and water balance is maintained, the length of survival of an obstructed dog seems to depend almost entirely on (1) the exact level of the obstruction below the bile papilla and (2) the fat reserve.

Plastic Reconstruction of Common Bile Duct.—Schrager and his associates describe a new method for the plastic reconstruction of the common bile duct. A viable tube from 1 to 2 inches (2.5 to 5 cm.) long is made from a flap of pyloric mucosa. This tube may be anastomosed either to the gallbladder or to a biliary duct. The gastric orifice of the tube is constructed to prevent regurgitation. The authors have performed the operation successfully in a number of dogs without postoperative complications appearing within a period of from two to three months.

Experimental Spinal Anesthesia.—Observations made by Ferguson and North on dogs anesthetized by the subarachnoid injection of procaine hydrochloride at varying levels permit the following conclusions: 1. Accompanying a typical anesthesia, there is a fall in blood pressure averaging 56 per cent, a slowing of the pulse rate, and a diminution in the respiratory movements of the thorax. 2. The fall in blood pressure cannot be explained on the basis of a splanchnic paralysis. Division of the splanchnic nerves produces only a slight alteration in the general blood pressure, and the typical fall of spinal anesthesia can be produced in animals with both splanchnic nerves completely severed. The entire vasomotor system participates in a vasodilatation, and the degree of blood pressure depression is in direct ratio to the number of white rami anesthetized. 3. The fall in blood pressure may be greatly ameliorated by the vasoconstrictor effect of preliminary medication with ephedrine. 4. The retardation of pulse rate is probably due to an interruption of impulses in the cardiac accelerator nerves. 5. Paralysis of motor fibers to the intercostal nerves seems to account for the depression of thoracic respiratory excursions. 6. Complete suppression of respiration occurs when procaine hydrochloride reaches the cervical portion of the cord and the medulla in sufficient concentration to paralyze the phrenic nerves or the respiratory center itself.

Varicose Vein Solutions.—According to Kilbourne and his associates, mercuric chloride and red mercuric iodide in the injection treatment of varicose veins have been fatally toxic in three cases. Metaphen is less toxic and is not likely to cause a slough. Experiments on rabbits did not indicate serious danger from toxicity in other solutions tested. Sugar derivatives, and sodium chloride, are nontoxic and relatively painless. Their use has been associated with an incidence of deaths from infection and embolism not found with quinine-urethane. Unlike quinine-urethane, they are not self-sterilizing or bactericidal. Since they are easily contaminated, they should be handled with extraordinary care in technic to prevent infection. The sloughs which they make when injected out of the vein are less serious than the salicylate and quinine sloughs. Sodium salicylate is efficient as a sclerosing agent. It is bactericidal to Staphylococcus aureus only in the strong solutions. It may cause a painful cramp after injection, and the sloughs which it makes are more serious than those following dextrose and sodium chloride. Lithium salicylate avoids the pain of sodium salicylate but is slightly more toxic and is said not to keep well in solution. Sodium morrhuate is not a toxic solution, and if injected out of the vein, the sloughs which it makes are not so serious as the salicylate and quinine sloughs. It is not bactericidal or self-sterilizing. Quinine-urethane is highly efficient as a sclerosing agent and, even when diluted, is bactericidal to Staphylococcus aureus. It has a perfect mortality record, possibly because of its bactericidal action in preventing phlebitis and embolism. It may be slightly toxic to occasional patients and when injected out of the vein does not give the warning of pain given by the other solutions. It causes no pain at the time of injection, and if the leg is kept bandaged, the occasional pain the next day is usually prevented. Because of its perfect mortality record, the authors regard it in expert hands the solution of choice—except in small-superficial thin walled veins, provided of course it is used by those sufficiently experienced not to allow extravascular escape.

Primary Benign Tumors of Ureter.—Melicow and Findlay report in detail a case of primary benign ureteral neoplasm accompanied by a stricture of the ureter, ureteral and renal calculi, and marked dilatation and infection of the kidney pelvis and ureter. This combination of lesions has never before been reported. The literature is carefully reviewed. From their study of these cases, the authors conclude that primary benign ureteral tumors are rare lesions which are infrequently diagnosed. The treatment that is safest for the patient and offers him the best chance for a cure is primary nephro-ureterectomy.

Infections and Degenerations of Uterine Cervix.—Mayo presents evidence that the difference in death rate between total abdominal hysterectomy and subtotal abdominal hysterectomy is slight, if any, and that the higher death rate usually attributed to total abdominal hysterectomy is probably due to the selection of graver surgical risks rather than to differences due to operative technic. It is also claimed that more patients would die from the complete operation than would die from carcinoma developing in the remaining stump of the cervix. If surgeons who fear to perform total hysterectomy accept the responsibility for the future life and health of the patient and feel that the cervix is a potential source of carcinoma and often a focus of infection, it is suggested that they perform subtotal hysterectomy and follow this procedure ten or twelve days later by some method of removal of the cervix, of enucleation of the canal, or of destruction of the cervical canal by cautery. Occasionally this procedure brings to light an otherwise hidden early carcinoma. The procedure would not increase the mortality and would accomplish all that is desired. The patient who has undergone subtotal hysterectomy only should be advised to return from time to time for observation. In some cases it may be advisable to use the actual cautery on the cervical stump, or prophylactic douches, in an attempt to clear up infection. The views given were reestablished in the author's mind because of a recent review of cases at the Mayo Clinic, which brought to light that, between January, 1910, and July, 1930, ninety-nine patients who had undergone subtotal hysterectomy there or elsewhere had presented themselves later with carcinoma of the remaining stump. In 55 per cent of these, carcinoma had developed three years or more after subtotal hysterectomy, and the longest interval was twenty-nine years.

Acute Suppurative Pleurisy in Children.—From a study of 123 cases of acute suppurative pleurisy in children and of comparative data, Cohen believes that the open method of drainage preceded by repeated aspiration is the choice method of treatment. Simple intercostal incision with open drainage is the preferred procedure in the very sick and in infants; rib resection for all other children. Local infiltration with procaine hydrochloride should be used whenever possible and can be used in most cases. The complications of empyema, and not the disease itself, seem to play the greater part as contributors to the mortality from this disease. Acute otitis media, in some cases complicated by acute mastoiditis, was the most frequent complication. Proper prophylactic care of the nasopharynx is recommended. Diligent after-care, next to the operative method, is important in surgically treating this disease. The value of operative methods must be measured not by the resulting mortality alone but by their ability to shorten the period of convalescence, to diminish the incidence of secondary operations, and to prevent chronicity.

Maggot Treatment of Chronic Osteomyelitis. — In a series of 100 cases including infections resulting from fractures, tuberculous and pyogenic chronic osteomyelitis, and an infected stump following repeated amputations, Livingston has had 95 per cent of cures with the maggot treatment. The success of this treatment does not alone depend on the scavenger activities of maggots. A series of experiments to be reported at an early date would seem to show that some additional agent is developed within the wound which is sufficiently powerful to overcome infection and permit the normal hydrogen ion concentration balance to be established. This agent is believed to be a bacteriophage.

Texas State Journal of Medicine, Fort Worth

27: 837-918 (April) 1932

Clinicopathologic Aspects of Endometropathies. W. R. Cooke, Galveston. —p. 844.

Pelvic Floor Injuries and Repairs. H. E. Lancaster, Beeville.—p. 847.

*Mixed Tumor of Lacrimal Gland: Report of Case. C. S. Sykes and H. Williams, Galveston.—p. 850.

Trachoma. C. S. Alexander, Houston.—p. 852.

Injuries of Cornea and Syphilis. V. R. Woodward, Fort Worth.—p. 856.

*Submucous Resection in Children. R. E. Windham, San Angelo.—p. 859.

Modern Preventive Medicine as Practiced Today. T. C. Terrell, Fort Worth.—p. 862.

Education and Prevention of Disease. N. M. Washer, San Antonio.—p. 867.

Dependence of Ex-Service Men on Medical Profession. H. Brennan, Laredo.—p. 871.

Mixed Tumor of Lacrimal Gland.—According to Sykes and Williams, tumors of the lacrimal gland are comparatively rare. The most common type is that of the mixed tumor. These tumors are potentially malignant and should be considered as such. The exact origin of the mixed tumor is not known, but it is thought to be derived from epithelial structures. The authors report a case of a mixed tumor of the left lacrimal gland, verified by microscopic examination.

Submucous Resection in Children. — Windham believes that submucous resection affords the best relief for a blocked nasal passage and that the procedure should not be followed by deformity if the proper precautions are observed. The ultimate effects of submucous resection in relieving nasal obstruction in children cannot be denied. Bias should be laid aside and surgical procedures selected to meet the exigencies of the case under consideration. There is a positive need for relief of children under the age of puberty who are suffering from nasal obstruction. Mouth breathing can never supplant nasal respiration; the part must do what it is intended for. No one not skilled to do the classic operation in adults should operate on children, as bad results will follow. The operation of submucous resection is not entirely successful, unless interference with drainage and ventilation of the sinuses has been remedied; but, when indicated and properly performed, the results are gratifying. The best guard against sinusitis and sinus operations is perfect drainage at a time when sinusitis can be prevented, which is attained only by a physiologically perfect nose.

Virginia Medical Monthly, Richmond

59: 1-64 (April) 1932

*Spontaneous Subarachnoid Hemorrhage: Report of Four Cases. S. D. Blackford, University.—p. 1.

Bacterial Allergy and Chronic Arthritis. W. T. Vaughan, Richmond. —p. 7.

Abdominal Drainage. S. Leigh, Norfolk.—p. 11.

Some Factors in Etiology of Vascular Hypertension. P. S. Smith, Abingdon.—p. 12.

*Transurethral Resection of Prostate: Report of Cases. W. C. Stirling, Washington, D. C.—p. 15.

Physical and Roentgen-Ray Examinations of Tuberculous Chest. J. B. Nicholls and L. R. Broome, Catawba Sanatorium.—p. 22.

Value of Roentgenogram in Study of Mastoids. C. W. Eley, Norfolk. —p. 24.

Trichiniasis: Five Cases in One Family with Results of Skin Tests. O. Swineford, Jr., and W. W. Waddell, Jr., University.—p. 28.

Abdominal Operations: Report of Nine Hundred Consecutive Operations. G. H. Reese, Petersburg.—p. 34.

Discipline in Tuberculosis. J. E. K. Flannagan, Salem.—p. 37.

Obstetric Anesthesia in Country Practice. L. H. Hoover, Clarksville. —p. 40.

Diabetic Coma: Report of Twenty-Two Cases. D. C. Ashton, Richmond. —p. 41.

Etiology and Treatment of Enuresis. J. S. Weitzel, Richmond.—p. 43.

Spontaneous Subarachnoid Hemorrhage. — Blackford states that spontaneous subarachnoid hemorrhage is apparently not a rarity although it has been neglected in American literature until recent years. It may occur at any age and is relatively common in young people. There are many possible causes for its occurrence, but a congenital cerebral vascular anomaly is probably responsible for more cases than any other single cause. Its onset is usually abrupt. The symptoms are those of a combination of mechanical pressure and meningeal irritation. A homogeneously bloody spinal fluid is always present. The immediate prognosis is grave and recurrences are not uncommon. The treatment consists of controlling the intracranial pressure and removing the irritating fluid when necessary. Of four cases presented by the author, a definite etiologic diagnosis of a congenital vascular anomaly was established by necropsy in the only fatal case. This diagnosis seems most probable in two others, and in the remaining one it may well have been the cause. All four cases were characterized by the abrupt onset of coma in otherwise healthy persons, three of whom were under 30. Headache, mental confusion and signs of meningeal irritation occurred in all those surviving. In three instances, evidence of increased intracranial pressure was obtained. Two of the patients suffered from respiratory failure presumably due to a medullary compression. All the spinal fluids were homogeneously bloody, and fever was a constant observation. Leukocytosis was present in the three cases in which a white count was done, and albuminuria, transient in character, was demonstrated in the two cases in which a urinalysis was performed within twenty-four hours after onset. There was no glycosuria in this series. Evidence of syphilis was lacking in all four. Therapeutic lumbar puncture apparently gave definite relief from meningeal symptoms in the three cases in which it was used. Caffeine seemed to relieve the respiratory failure of the fatal case. The three survivors are at present without signs or symptoms attributable to their illness.

Transurethral Resection of Prostate.—Stirling considers that in median bars, contracture and other forms of minor obstruction of the vesical outlet, transurethral resection is the method of choice. In hyperplasia of the lateral or median lobes, the obstruction can be corrected in grade I, II and III, but should not be used in grade IV or the highly vascular type of obstruction or in old, feeble subjects. In the presence of complications, such as diverticula or stone, resection may be followed by litholapaxy or excision of the diverticulum. Hemorrhage can and must be adequately controlled by using the fulgurating or spark-gap current, thus eliminating the principal hazard connected with this procedure. The mortality has been greatly lessened, the morbidity decreased and the average stay in the hospital reduced to days instead of weeks as formerly. Transurethral prostatic resection is a highly technical procedure and meets all the requirements for this type of work. By treating the patients earlier, one will greatly reduce or obviate cardiovascular, renal and the systemic derangements following massive retention. Preliminary cystoscopy, orienting the type and character of the obstruction, is necessary. Resection is a supplement to and not a substitute for prostatectomy, each having definite, clear-cut indications.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

16: 193-256 (April) 1932

Note on Inorganic Constituents of Normal and Cataractous Human Crystalline Lenses. G. Mackay, C. P. Stewart and J. D. Robertson. —p. 193.
*"Angina Capitis." I. C. Michaelson.—p. 202.
School Myopia. A. Sorsby.—p. 217.
Refraction in Cases of Congenital Torticollis Associated with Hemiatrophy of Face. A. Sorsby and M. Shaw.—p. 222.
Device for Preventing Glare in Electric Ophthalmoscopes. N. B. Harman.—p. 225.

"Angina Capitis."—Michaelson presents a summary of the chief known facts of referred visceral pain, physiologic, clinical and experimental. On the basis of a study of the activity and innervation of the ciliary muscle, of the clinical features of ocular headache, and of an experimental relationship between the skin and the ciliary muscle, he concludes that there is a sufficient concurrence between the two sets of facts to justify the suggestion that the mechanism which underlies ciliary headache is analogous to that which gives rise to referred visceral pain in other parts of the body, more particularly that ciliary headache arises from ciliary dysfunction in the same way in which angina pectoris arises from cardiac dysfunction.

British Medical Journal, London

1: 551-598 (March 26) 1932

Chronic Pelvic Woman. A. Bourne.—p. 551.
*Oleothorax, with Observations on Twenty Cases. N. M. Munro.—p. 554.
Fulminating Meningococcal Meningitis: Recovery Following Systematic Cisternal Punctures and Polyvalent Serum. J. N. C. Ford and G. Shera, with Collaboration by J. Purves-Stewart.—p. 558.
Points in Connection with Successful Issue of Simple Prostatectomy. A. R. Thompson.—p. 560.
*Carbon Dioxide in Prophylaxis and Cure of Postanesthetic Respiratory Complications. J. R. Mackenzie.—p. 561.

Oleothorax.—Munro considers that oleothorax is the treatment of choice in suitable cases of tuberculous empyema and that it proves an alternative of the more drastic procedure of thoracoplasty in certain conditions complicating a spontaneous or artificial pneumothorax. The technic is simple and speedy with a Dieulafoy two-way syringe and flexible metal attachments. Olive oil is to be preferred to liquid petrolatum because the latter is a pleural irritant. Because of its irritant properties, aromatized oil should be added to the oil only when an effusion is being replaced, and then in graduated strengths. Discretion regarding the oil used makes complications negligible. Before a case can be considered suitable for treatment, it seems to demand requirements similar to those governing artificial pneumothorax therapy. Thus the condition of the contralateral lung and of other tissues regarding tuberculous involvement has to be considered before instituting treatment. The ideal cases are naturally few, and the author was occasionally tempted to overlook quiescent foci in other organs for the sake of determining the more immediate results of this treatment. The outlook for the more advanced case of tuberculosis is so hopeless that the patient's gratification at knowing that some treatment is being attempted seems to jusify such liberties with oleothorax.

Carbon Dioxide in Postanesthetic Respiratory Complications.—Mackenzie reports his experiences in 5,000 cases in which carbon dioxide was administered in combination with general anesthesia. Among the advantages that accrue to the surgical patient, three stand out prominently: (1) the prophylactic action of carbon dioxide against the onset of respiratory complications, irrespective of the anesthetic agent; (2) the protection afforded to patients who come up for operation with concomitant respiratory disability, and (3) the curative action of carbon dioxide when postanesthetic respiratory complications have occurred. For purposes of observation, the cases are arranged in four groups. In the first and largest group, carbon dioxide to the extent that appeared advantageous to the patient was administered in the operating room, during the induction, the maintenance and the recovery stages of gas, oxygen and ether anesthesia. In the second group, carbon dioxide was used in the induction and recovery stages of deep ether anesthesia. In the third group, carbon dioxide was used as a prophylactic against respiratory complications during the recovery stage of anesthesia in the operating room and in the ward after the operation. In the fourth group, carbon dioxide was administered as a therapeutic agent in cases of postanesthetic respiratory complications. The tendency has been for the first three groups to merge into one, and recently, as far as it has been possible, the patients have had carbon dioxide during the induction of and recovery from anesthesia, in the operating room and in the ward, at regular intervals throughout the first twenty-four to thirty-six hours after the operation. The author has evolved the following technic of administration: 1. Pulmonary ventilation is controlled and regulated to the normal during the induction and maintenance of anesthesia. 2. During the closing stages of the operation, hyperventilation and deetherization is carried out until the patient leaves the operating room. 3. In the ward the administration consists of the inhalation of carbon dioxide and oxygen for five-minute periods. These periods are continued at intervals of from four to six hours throughout the first twenty-four to thirty-six hours after the operation. 4. This periodic administration is continued if there is any evidence of respiratory complications. The percentage of carbon dioxide, the duration of the period, and the frequency of administration should be regulated according to the toleration of the individual patient. The apparatus used in the ward consists of a small platform on casters to carry one cylinder of carbon dioxide and one cylinder of oxygen, with a central standard to carry a sight feed bottle. It has proved eminently simple and satisfactory. The freedom from pain in abdominal wounds during hyperventilation with carbon dioxide as compared with the pain and distress which the patient endures in voluntary deep breathing is a marked feature of the administration.

1: 599-642 (April 2) 1932

Psychologic Interest in General Practice. F. G. Crookshank.—p. 599.
*Chronic Nontuberculous Infection of Lungs in Children. F. H. Young. —p. 604.
*Significance and Origin of Lactic Acid in Gastric Contents. I. Murray and A. B. Robertson.—p. 607.
Jejunostomy and Witzel's Operation in Treatment of Vicious Circle Vomiting. H. Donovan.—p. 609.
Idiopathic Congenital Dilatation of Common Bile Duct. E. R. Frizelle. —p. 610.

Chronic Nontuberculous Infection of Lungs in Children.—Young believes that in chronic nontuberculous infection of the lungs in children the child should be removed, if possible, from other members of the family with chronic coughs; it is probable that reinfection does take place when once the ground has been prepared. In cases in which this is impossible, an open-air school will probably produce marked benefit. Extra rest should be insisted on; the child should have long nights and should lie down for a couple of hours in the afternoon, preferably in the open air. Any definite sepsis or obstruction in the upper air passages must be dealt with. Breathing exercises are of great value; they expand the bases of the lungs and tend to permit efficient drainage. In the absence of real sunlight, artificial sunlight is usually the main method of attack for increasing the general resistance. The diet should be liberal and contain considerable quantities of vitamins. Cod liver oil and malt should always be given, and plenty of fresh fruit and vegetables. The author has found the use of dextrose to be valuable. He has been trying these children on vaccines for some time, and in certain cases there has been a benefit; on the whole, however, the results have been disappointing. When the disease has reached a more advanced stage and sputum is a prominent feature, postural drainage is beneficial. Drainage by means of a bronchoscope is only palliative, and it is impracticable to get this done often enough to be of any great use. Collapsing the lung by means of an artificial pneumothorax would be valuable if practicable, but in nearly every case adhesions prevent an adequate collapse. Evulsion of the phrenic nerve seems to be the most reasonable form of treatment in more advanced cases. Lobectomy of the affected lobe is such a severe operation that it is hardly feasible at present. Thoracoplasty in children is not satisfactory; the deformity of the chest is very severe, and the results do not seem to justify the risk. Expectorants and inhalants are disappointing; they may be of some symptomatic value in relieving the cough and making the sputum, if it has become offensive, less so. The use of the creosote chamber is probably the most efficient method, as by this means any stagnant secretions are generally brought up. The severity of the cough, however, in a chamber of this kind frightens the child so badly that it is hardly practicable.

Significance and Origin of Lactic Acid in Gastric Contents.—Murray and Robertson report that an investigation of test meals from fifty subjects, pathologic and normal, showed the presence of lactic acid in 74 per cent. While occurring more frequently in cases of hyposecretion, it may be present even in hypersecretion. The presence of lactic acid had apparently no clinical significance. The production of lactic acid was almost certainly due to the action of Bacillus acidilactici, which was found to be present in the perfectly normal stomach.

Edinburgh Medical Journal

39: 229-284 (April) 1932

Genesis of Blood Platelets. C. H. Watson.—p. 229.

*Complement Fixation in Meningococcal Infections as an Aid to Diagnosis. H. A. Cookson.—p. 258.

Clinicopathologic Study of Carcinoma of Stomach, Using Large Microscopic Sections and Dissecting Lymphatic Spread. E. B. Benedict.—p. 263.

Complement Fixation in Meningococcal Infections.—Cookson emphasizes the fact that although the complement fixation method appears to offer further confirmation in cases diagnosed or thought to be meningococcal infections, in common with all serologic tests, it must not be considered apart from the clinical and other observations in each individual case. In the author's opinion it in no way displaces the significance of a polymorphonuclear leukocyte exudate when such is present, or the value of the estimation of chlorides when a lymphocytic preponderance occurs, for the chloride figure is rarely very low in meningococcal infections in his experience. In cases in which no alteration in the spinal fluid can be observed, the examination of the blood serum by complement fixation tests may give a clue to the condition. In difficult cases, if one or more of the triad (1) polymorphonuclear leukocytes in spinal fluid, (2) not a very low chloride content, (3) positive fixation test should be found, the author considers that the clinician should treat the patient for a meningococcal infection.

Guy's Hospital Gazette, London

46: 121-136 (April 2) 1932

*Meningitis and Meningism. J. A. Ryle.—p. 123.

Vincent's Infection. A. Bulleid.—p. 127.

Meningitis and Meningism.—Ryle believes that, while they are specific of meningeal irritation, the symptoms of meningism are nevertheless not specific of any one type or cause of irritation. This is true of all well defined symptoms. They constantly specify a type or mode of physiologic disturbance, but they do not in themselves indicate the particular cause of the disturbance. For a full diagnosis other clues must be sought in the age and the general condition of the patient, in the history, and in associated symptoms and signs. There are four main groups of cases in which meningism may be observed: (1) acute pyogenic meningitis (meningococcic, pneumococcic, streptococcic); (2) subacute meningitis complicating general tuberculosis, poliomyelitis or activated syphilis; (3) the aseptic meningitis of subarachnoid hemorrhage, and (4) the meningeal irritation or aseptic meningitis of pneumonia and otitis media in children. With ordinary clinical care it should be possible to place a case in one of these four groups, and often enough to give a correct opinion. With the aid of the lumbar puncture needle, an accurate diagnosis can generally be established.

Indian Medical Research Memoirs, Calcutta

No. **22:** 1-113 (Feb.) 1932

Studies in Avian Spirochetosis. R. Knowles, B. M. das Gupta and B. C. Basu.—p. 1.

Journal of Laryngology and Otology, Edinburgh

47: 229-296 (April) 1932

*Malignant Disease of Hypopharynx. von Eicken.—p. 229.

Fixation Abscess. G. Canuyt.—p. 235.

Note on Treatment of Functional Aphonia. C. MacMahon.—p. 243.

Malignant Disease of Hypopharynx.—According to von Eicken, malignant tumors of the hypopharynx may be divided into two groups. The first group includes tumors arising from the lateral walls of the larynx, the outer surface of the epiglottis, the pharyngo-epiglottic fold and the plica aryepiglottica. The tumors of the second group take origin from the sinus pyriformis and the lowest parts of the hypopharynx. The tumors of the first group develop more slowly and form metastases later than do those of the second group, which are of rapid growth and show early metastasis in the regional lymph nodes. Recently the French school has proposed a division of these tumors into two groups, which can be distinguished by their microscopic appearances. The first is the epidermoid or cutaneous type, which is characterized by the presence of typical epithelial pearls and prickle cells. The second is the anepidermoid or mucous type, and it shows the so-called Hollundermarkzellen, which are large polyhedral cells with so transparent a protoplasm as to produce a vacuolated appearance. True epithelial pearls are not present, but the laminated arrangement of the so-called onion bodies, which are a constant feature of this type of tumor, may cause confusion; however, a distinction is readily made when it is observed that well marked nuclei are present. Both these types are found relatively often in the hypopharynx, but the mucous type is the more frequent.

Lancet, London

1: 709-760 (April 2) 1932

Practical Points in Diagnosis and Routine Treatment of Pulmonary Tuberculosis. P. W. Edwards.—p. 709.

*Pecten: Pecten Band: Pectenosis and Pectenotomy. A. L. Abel.—p. 714.

*Active Principle in Hog's Stomach Effective in Pernicious Anemia. J. F. Wilkinson and L. Klein.—p. 719.

Diagnosis of Diseases of Hip Joint. J. F. Brailsford.—p. 721.

The Pecten Band.—Abel states that the "pecten" is the name given by Stroud in 1896 to approximately the middle third of the anal canal. In a normal subject this has a glistening appearance, is quite smooth, and is almost entirely devoid of sweat glands. Above it is bounded by the wavy dentate or pectinate line caused by the anal papillae, and below by Hilton's white line. The pecten marks the union of the proctodeum and the hind gut. The part below the pecten is formed by an ectodermal depression named the proctodeum; the part above this line is formed from the hind gut. The pecten band is a fibrous deposit that takes the form of a circular band varying in thickness and density, completely surrounding the lower part of the anal canal, and situated between the mucous membrane of the pecten and the external sphincter muscle. In well marked instances the band of fibrous tissue can be distinctly felt and gives an impression to the examining finger such as would be obtained if a rubber umbrella ring had been inserted beneath the skin at the anal margin. The pecten band does not exist in the healthy anal canal. It is purely pathologic in origin. Passive congestion in the region of the pecten may be brought about by a number of factors. Probably the commonest is the varicosities of the superior hemorrhoidal veins. Constipation alone without the presence of hemorrhoids has an exactly similar effect, as has also spasm of the sphincter muscles. With the passage of months and years, the pecten band becomes more and more dense and prevents the proper relaxation of the sphincters. There is then difficulty in obtaining complete emptying of the rectum, the size of the caliber of the feces is diminished, and the lower half of the anal canal tends to be held immobile, while the elevating effect of the pubococcygeal part of the levator ani muscle has the effect of pulling the internal away from the external sphincter, thereby causing sometimes as much as an inch of separation between the two sphincters and still further increasing the difficulty in obtaining complete emptying of the rectum during defecation. The tighter the anal aperture becomes, the greater the straining at stool; hence any hemorrhoidal condition tends to be aggravated, and if hemorrhoids become prolapsed through the anal orifice they are apt to become strangulated by the nonyielding pecten band. As a result of this deposit of fibrous tissue in the submucosa of the pecten, the mucous membrane of this region, instead of being freely movable over the subjacent tissues, becomes anchored to it and poorly nourished with blood. This renders it much more easily damaged than in a normal subject. It is uncommon to find a fissure in a patient without a preexisting pecten band. If the anus is everted in a patient suffering from fissure, definite white strands of fibrous tissue can be discerned running circularly around the anal canal at the bottom of the fissure; and if a portion of this tissue is taken for microscopic section it will be found to consist of fibrous tissue only. The mucous membrane of the rectum frequently becomes unhealthy in patients with long standing pectenosis; secretion of normal rectal mucus is apt to become excessive, and the patient suffers from pruritus ani. When no other pathologic condition exists in the rectum, pruritus of these patients may be cured by performing the operation of pectenotomy, the technic of which the author describes in detail.

Hog's Stomach in Pernicious Anemia.—Wilkinson and Klein have been unable to obtain stomach extracts that are hematopoietically active for the treatment of pernicious anemia by the usual methods which, when applied to liver, yield active extracts. They describe a method of obtaining active stomach extracts which involves the subjection of stomach tissue to high pressure in a special apparatus. Experiments on the fractionation of this active extract are described; it was found that the use of alcohol readily separates a precipitate which is active in the treatment of pernicious anemia while, on the other hand, the filtrate is inactive. Further experiments on the concentration of this active fraction are in progress. Some evidence showing that the active principle in hog's stomach is not identical with that present in liver is discussed. It is considered that these experiments support the clinically suggested view that the active principle in hog's stomach effective in perinicious anemia is of an enzyme-like nature. The suggestion is made that this "enzyme" acting on the proteins in a normal diet may produce a substance which is stored as the active principle in the liver until it is required for hematopoietic regeneration. For convenience the authors propose temporarily to term this substance in hog's stomach "haemopoietin."

Medical Journal of Australia, Sydney

1: 347-390 (March 12) 1932

Ganglioneuroma of Cerebrum, with an Additional Case. L. B. Cox. —p. 347.
*Occult Tuberculosis of Tonsil in Relation to Tuberculous Cervical Adenitis. R. Webster.—p. 351.
Stammering, National Tragedy: Plea for Further Research and Scientific Treatment. T. G. Leary.—p. 355.
Need for Science of Clinical Anthropology. F. Trinca.—p. 361.

Occult Tuberculosis of Tonsil in Relation to Tuberculous Cervical Adenitis.—Webster presents the results of an investigation regarding the incidence of tuberculosis in the tonsils of 132 children. Of eighty-six children exhibiting tuberculous cervical adenitis, forty, or 46.5 per cent, were shown to have tuberculous lesions in the tonsils. Among forty-six pairs of tonsils removed for simple hypertrophy or other cause apart from tuberculous cervical lymph nodes, no instance of tuberculosis of the tonsil was detected. The value of histologic diagnosis is discussed. Emphasis is laid on the fact that primary tuberculosis of the tonsil is seldom, if ever, apparent clinically. On the basis of the results of his investigation, the author concludes that tonsillectomy is clearly indicated in the treatment of tuberculous cervical adenitis.

Tubercle, London

13: 289-336 (April) 1932

*Occasional Elusiveness of Tubercle Bacillus in Gross Lung Lesions. W. M. Cumming and Winifred M. Foster.—p. 289.
*Pleural Effusion in Artificial Pneumothorax Treatment. A. P. Ford. —p. 292.
Rationale of Treatment of Pulmonary Tuberculosis by Phrenic Exeresis. M. K. Pai and K. V. Rao.—p. 295.
Simple Method of Diluting Tuberculin. J. W. Tomb.—p. 299.
Environments in Tuberculosis. H. Sewall.—p. 302.

Elusiveness of Tubercle Bacillus in Gross Lung Lesions.—Cumming and Foster stress the importance of frequently repeated microscopic and cultural examination of the sputum and, more particularly, of repeated animal experiment in many cases of pulmonary catarrh and fibrosis before one excludes, on bacteriologic grounds, the possibility of the lesion being tuberculous. As a routine, all sputums in which tubercle bacilli are not demonstrated microscopically in a direct smear after a careful fifteen minutes' search should be subjected to "concentration" by the following method: The sputum is digested in an alkaline medium, neutralized and centrifugated after the addition of two drops of egg white; smear preparations are made of the deposit and scum, if any. More than one tubercle bacillus must be demonstrated before the result is accepted as positive. Further, an attempt is made to isolate tubercle bacilli, generally on Dorset's egg medium, by direct cultural methods (after concentration by a method similar to the one described) from the sputum of every patient admitted. Guinea-pig inoculation is not used as a routine method unless, after culture has failed and repeated microscopic examinations of concentrated specimens have been negative, the result of clinical methods of investigation still leaves open the possibility that the lesion is tuberculous.

Pleural Effusion in Artificial Pneumothorax.—Ford believes that all pleural effusions complicating artificial pneumothorax are due to the breaking down of adhesions. He is led to this conclusion by the following facts: 1. Adhesions are extremely common; it is in only a small percentage of cases that an absolutely complete collapse is obtained. 2. Thoracoscopic examinations have shown that the size and strength of adhesions vary considerably. 3. Effusions occur most frequently at the commencement of the treatment; i. e., while the adhesions are being stretched. 4. A large majority of cases show marked improvement and a greater amount of collapse after the effusion occurs. 5. Cauterization of adhesions is almost invariably followed by an effusion.

Chinese Medical Journal, Shanghai

46: 115-242 (Feb.) 1932

Intestinal Complications of Pregnancy, Labor and Puerperium. J. P. Maxwell and A. I. H. Wong.—p. 115.
*Puerperal Creatinuria. N. J. Eastman and S. W. Lee.—p. 143.
Some Remarks on Changes of Eyeground in Toxemia in Pregnancy. A. Pillat.—p. 149.
*Escape of Lipiodol into Utero-Ovarian Venous System in Hysterosalpingography. A. I. H. Wong, C. Wu and M. H. Chien.—p. 162.
*Wassermann and Kahn Reactions of Human Milk. Dorothy Huie Wong and A. I. H. Wong.—p. 168.
Sarcoma of Uterus: Report of Five Cases. S. W. Lee.—p. 175.
Study of Manual Extraction of Placenta in China: Report of Twenty-Five Cases. A. I. H. Wong.—p. 184.
Pseudohermaphrodism: Report of Unusual Case. P. C. Tung.—p. 197.
Bacillus Welchii Infection of Uterus During Labor: Report of Seven Cases. E. M. Crooks.—p. 202.
Laceration of Vagina During Coitus: Report of Three Cases. Thelma K. P. Tsang.—p. 207.
Compound Presentation: Report of Four Cases. A. I. H. Wong.—p. 214.
Ovarian Cyst Complicated by Marked Ascites: Report of Case. Y. H. Hsu.—p. 219.
Cysts of Uterus. J. P. Maxwell.—p. 224.

Puerperal Creatinuria.—Eastman and Lee report that lactating puerperas excrete little urinary creatine during the first two or three days of the puerperium, but immediately thereafter a rapid increase in the creatine-creatinine ratio occurs so that on the sixth day it reaches levels which average about 0.6. Nonlactating puerperas, on the other hand, exhibit a very high creatine-creatinine ratio on the second day post partum, followed by a rapid decrease in the amount excreted, so that by the seventh or eighth day the urinary creatine in this group is usually reduced to a trace. Compound solution of iodine, in doses of 1 to 2.5 cc. daily, has no effect on the creatine excretion of the puerperium; the basic mechanism of puerperal creatinuria, therefore, differs from that seen in exophthalmic goiter, in which compound solution of iodine has been found to diminish the creatinuria. Puerperal creatinuria closely parallels mammary engorgement and seems to be related in some unknown way with the excessive distention of the mammary ducts with milk.

Escape of Iodized Oil into Utero-Ovarian Venous System in Hysterosalpingography.—Wong and his associates report four cases in which the injection of iodized poppyseed oil 40 per cent into the uterus during hysterosalpingography was followed by appearance of the oil in the utero-ovarian system. It is fortunate that the amount of oil escaping during a hysterosalpingography is usually too small to be of any clinical significance. Nevertheless this oil is able to kill an animal when it is given intravenously in sufficiently large doses. The authors were able to kill rabbits weighing from 1.5 to 2 Kg. by introducing 1 cc. of the drug intravenously. The possibility of this danger should be borne in mind, and care taken to avoid it. The authors are therefore in favor of carrying on the intra-uterine injection of iodized oil between seven and ten days after the cessation of the menstrual period and under the fluoroscope to avoid such an accident. Using this technic for the last three years, they have not encountered a single accident of this nature. They believe that injecting under sight is better than any arbitrary way of regulating the pressure, since the permeability of the endometrium varies greatly in different individuals. Practically speaking, this observation deserves serious consideration. If oil can make its way into the utero-ovarian venous system so easily during hysterosalpingography, it will be quite easy for air or any other gas used in Rubin's test to enter and lead to a disastrous result. In fact, two cases in which death followed insufflation of the fallopian tubes have been reported by Maench; other undesirable manifestations have been related by Aldridge and by Kern. The authors are beginning to doubt Rubin's statement "The method proposed by me should never result in mortality," since iodized poppy-seed oil 40 per cent escapes thus readily, as seen in their cases. For this reason a hysterosalpingogram used with the fluoroscope is to be preferred to Rubin's test.

Wassermann and Kahn Reactions of Human Milk.—In 140 nonsyphilitic cases, agreement of the blood and milk was found by the Wongs in 99.2 per cent of the Wassermann reactions and 94.8 per cent of the Kahn reactions. In eleven syphilitic cases from which the milk specimen was obtained by the tenth day post partum, agreement of the blood and milk existed in 50 per cent of the Wassermann reactions and 70 per cent of the Kahn reactions. On the basis of their observations, the authors conclude that the Wassermann and Kahn reactions of human milk are not sufficiently reliable to be used as an alternative to the blood Wessermann and Kahn tests.

Journal d'Urologie Médicale et Chirurgicale, Paris

33: 217-320 (March) 1932

*Prostatectomy by Suprapubic Route in Diseases of Prostate Other Than Hypertrophy and Cancer. G. Marion.—p. 217.
External Tegument and Endocrine Secretions. E. Retterer.—p. 222.
Extradural Segmental Anesthesia. G. Giordanengo.—p. 245.
Fifty Cases of Epidural Anesthesia with Nupercaine. L. Phelip.—p 256.

Prostatectomy.—Marion discusses again the suprapubic route of prostatectomy in chronic prostatitis, which he recommended several years ago. He considers it preferable to the subpubic route in many cases as it avoids the danger of the interminable perineal fistulas that so often follow the latter method of operation. He thinks the operation indicated in the following types of chronic prostatitis: (1) lightly suppurating cases of slight importance from the anatomic point of view but resistant to all medical treatment, (2) cases presenting voluminous fistulized abscesses in the urethra, (3) cases accompanied by perineal fistula with periprostatitis, (4) cases presenting calculi, and (5) cases accompanied by hypertrophy of the prostate. The author thinks it advisable to confirm the indication for operation by urethrography. The technic of intervention in these cases, which differs a little according to the case, is described. In a number of cases the author has practiced a preoperative vaccination and he has never had any bad results in these cases, whereas in one of the cases in which he did not practice preoperative vaccination a general infection ensued. The author does not consider these interventions more dangerous than prostatectomy for hypertrophy and has experienced only two deaths among seventy-four interventions.

Pratique Médicale Française, Paris

13: 259-304 (April) 1932

Local Irritation, Local Vagotonia, Local Eosinophilia in Asthma. E. Bernard.—p. 259.
*Indications for Various Technics in Roentgenologic Examination of Lungs. Dioclès and R. Azoulay.—p. 269.
Bronchoscopy in Diagnosis of Bronchopulmonary Cancers. A. Soulas. —p. 280.
*Pleural and Pulmonary Primary Forms of Hodgkin's Disease. J. Bernard.—p. 286.

Various Technics in Roentgenologic Examination of Lungs.—Dioclès and Azoulay discuss the indications for the use of the various technics of roentgenologic examination of the lungs and the special merits of each method. Roentgenoscopy is useful in the location of large lesions and indispensable for execution of artificial pneumothorax, but it is deficient for diagnosis of many cases, especially miliary lesions. Whenever roentgenoscopy does not show anything but the clinical examination or anamnesis indicates something, a roentgenogram is indispensable. Roentgenography at a great distance usually suffices, but it should be supplemented more frequently than customary by profile and oblique negatives. The use of an antidiffuser is useful in cases of obesity, fibrothorax and large pleurogenous symphyses. When interpretation of simple roentgenograms is not possible, it is necessary to employ stereoroentgenography. This technic is useful in the course of artificial pneumothorax as it shows the shape of the stump and the location of adhesions and the presence of cavities in them, which may facilitate the operation of Jacobéus. It often permits location of foreign bodies or intrathoracic collections, which is of practical value from the point of view of surgical drainage at the most dependent point. It is indispensable in the study of the posterior mediastinum, whether one uses profile position, right anterior oblique position or left posterior oblique position. In these cases one can facilitate the reading of the negative by filling the esophagus with barium paste. It is equally indispensable for the diagnosis and location of cysts and tumors of the lungs and pleura; of hernia or eventration of the diaphragm from the point of view of location of the hernial orifice. Bronchial dilatation, simple or masked by pleurogenic symphysis of the mediastinum or of the large cavity, may sometimes be diagnosed by stereoroentgenography alone; when preceded by injection of iodized oil, positive diagnosis is possible. In cases of pleural or pulmonary suppuration, injection of iodized oil into the bronchi gives a particular negative aspect which is of great value. The direct injection of suppurating cavities, whether by puncture or by a fistulous orifice, is highly important. Despite the progress of technic it is impossible to solve all problems with roentgen rays and to give a precise diagnosis in all cases.

Pleural and Pulmonary Primary Forms of Hodgkin's Disease.—Bernard presents a comprehensive study of the symptoms of those pleural and pulmonary disturbances which exist as primary forms of Hodgkin's disease. Pleurisy as a primary form of Hodgkin's disease is relatively frequent, whereas a primary pulmonary localization of the disease is rare. The clinical aspects of primary pleural forms of lymphogranulomatosis are diverse. A rather frequent form is the one that has practically all the traits of serofibrinous pleurisy. In the presence of a serofibrinous pleurisy which cannot be otherwise accounted for, one should immediately think of Hodgkin's disease. The intensity of the dyspnea is the major element of the clinical picture. The unlimited production of fluid and its variegated cytologic picture are the essential characteristics of granulomatous pleurisy, but they are far from being constant. Whether it evolves slowly or rapidly, as a solitary manifestation or followed by other symptoms of the granulomatous complex, the pleurisy sooner or later becomes grave and terminates fatally. Any splenopleural or adenopleural syndrome should make the clinician think of Hodgkin's disease, especially in case of an adenopathy exhibiting the irregularity, indolence and total absence of softening and of tendency to suppuration, which is characteristic of the disease. The evolution of primary pulmonary forms of malignant granuloma manifests itself in symptoms that are rather common, so that for a long period there is usually nothing which permits their true nature to be suspected. Usually they assume the form of a chronic or subacute pneumopathy. The objective and subjective symptoms and the roentgenologic manifestations are discussed by the author, who finds none of them characteristic. In contrast to granulomatous pleurisy, the pneumopathies are seldom grave in themselves; but sooner or later the disease becomes generalized and the patient dies of cachexia or a complication. Hemoptysic, pseudomiliary, bronchopneumonic and mediastinopulmonary forms are mentioned; also the pleuropulmonary form. The diagnosis of pleurisies and pneumopathies that exist as primary forms of Hodgkin's disease is difficult. The former is most often confused with pleural tuberculosis and the latter, if of the silent type, is often mistaken for tuberculosis; or, if of the more characteristic type, it is mistaken for cancer of the lung. Roentgenologic visualization of a tracheobronchial adenopathy speaks against tuberculosis in adults. Histologic examination of a peripheral lymph node should be practiced when possible, as it aids in diagnosis. In its absence, diagnosis is often impossible.

Revue Sud-Am. de Méd. et de Chir., Paris

3: 193-288 (March) 1932

*Azotemia in Tetanus. R. F. Vaccarezza, J. Peroncini and A. J. Vaccarezza.—p. 193.
*Congo Red as Diagnostic Measure in Amyloidosis. D. Vivoli.—p. 208.
Scrotal Elephantiasis. Z. do Amaral.—p. 223.
Influenzal Meningitis and Syphilis. C. M. Rezende and A. A. Filho.—p. 228.
Practice of Surgical Interventions Under Local Anesthesia. H. V. de Paula.—p. 238.

Azotemia in Tetanus.—Vaccarezza and his co-workers observed an increase of the blood urea in twenty out of twenty-four patients with tetanus. In some cases the hyperazotemia reached high figures and was accompanied by lethal uremic manifestations. The determination of blood urea has a considerable prognostic significance. One should not predict a cure during the first two weeks of the illness without having determined the blood urea. The treatment of tetanus should always envisage the existing danger of uremia, so that it may be prevented and combated as far as possible. The pathogenesis of uremia in tetanus is complex. There is a functional or anatomic retention and above all an excessive production of urea due to an increase in tissue proteolysis. Tetanus is dangerous not only because of its paroxysms and contractions and the possibility of bronchopulmonary complications but also because of the disturbance of the azotemic equilibrium and the sugar regulation. Its toxic action is not limited to the nervous centers but extends directly or indirectly to other systems and to the organs influencing metabolism.

Congo Red as Diagnostic Measure in Amyloidosis.—Vivoli reports and discusses investigation of five cases of amyloidosis to support his statement that congo red is a valuable diagnostic measure in amyloidosis. His investigations show that (1) it is possible to obtain a vital staining of amyloid with congo red, without harm to the patient; (2) a retention of from 40 to 100 per cent of the dye one hour after injection speaks in favor of the probability of amyloidosis. Normally there is a retention of from 11 to 29 per cent of the coloring matter; the retention takes place chiefly in the liver and the kidneys. Its elimination commences about thirty minutes after injection and lasts from eight to ten days. In certain pathologic conditions such as syphilitic nephrosis and the beginning stage of glomerular amyloidosis the kidneys eliminate more rapidly and in greater amounts, so that the dye is quickly eliminated by the kidneys without being fixed. In advanced amyloidosis the dye disappears from the blood serum but cannot be found in the urine. In a case of this type in which slight traces of dye were found in the serum and the urine after the fourth test, the author attributes this to saturation of the amyloid substance by the congo red and elimination of the excess by the kidneys. In one case, necropsy three months after the last test revealed such a large quantity of fixed dye that it gave the impression that the injection had been performed several hours before death; no dye had appeared in the urine in the interval. From these considerations, the author thinks that the vital coloration of the amyloid tissue may last as long as the pathologic process itself.

Schweizerische medizinische Wochenschrift, Basel

62: 369-392 (April 16) 1932

*Studies on Phosphate and Calcium Under Influence of Viosterol. W. Heubner.—p. 369.
Destructive Action of Iodine on Acid Resistance of Tubercle Bacillus. S. Marbais.—p. 377.
Pernicious Anemia and Tetany. M. Geraldy.—p. 378.
Colloidal Mercury Sulphide. Gennerich.—p. 378.

Phosphate and Calcium Under Influence of Viosterol.—Heubner observed that large doses of viosterol (for each kilogram of body weight of the animal from 5,000 to 50,000 times the antirachitic rat unit) effect in rabbits and cats after a temporary slight reduction a considerable increase of the inorganic phosphate content of the blood. This increase is best noticeable two days after a single oral administration. The elimination of calcium in rabbits and dogs is not noticeably influenced by administration of large doses of viosterol. However, after a certain time there is a more active participation in the elimination on the part of the kidney, for at times the freshly voided urine contains insoluble salts in suspension. The organs of rabbits that have been treated with large doses of viosterol do not show noticeable changes in the calcium content. Only in those animals in which anatomic examination revealed processes of calcification in the organs were deviations from the normal calcium content noticeable.

Archivio Italiano di Chirurgia, Bologna

31: 1-115 (Jan.) 1932

*Chronic Stenosis of Duodenum Due to Perivisceritis. M. Agrifoglio.—p. 1.
Large Tumor of Carotid Gland: Removal After Resection of the Jugulocarotid Bundle of Vessels and of the Vagus. C. Trinchera.—p. 52.
*Dermatitis and Precancerous Lesions from Tar in Man. G. Bettazzi.—p. 69.

Chronic Stenosis of Duodenum Due to Perivisceritis.—Agrifoglio states that essential periduodenitis originates through the portal system, being due to transitory inflammation of the adjacent organs (gallbladder, stomach, pancreas) or to the remote viscera (appendix) through the possible intermediary of a lymphangitis or to permanent peritoneal lesions on an old and transitory infection of the gallbladder, pancreas and appendix. Some believe that the perivisceral adhesions are occasioned by general infections, e. g., tuberculosis and syphilis, but the etiology of perivisceritis still remains uncertain. Factors tending to compress and displace the duodenum are (1) insufficient development of the base of the thorax, (2) lumbar lordosis, (3) relaxation of the abdominal wall, and (4) exaggerated mobility of the cecum or extreme length of the mesentery and mesocolon. The facility with which small bands of adhesions cause stenosis is explained by the position of the duodenum, which predisposes it to compression between the spine and the root of the mesentery. Clinical and roentgenologic symptoms differentiate compression due to the superior mesenteric artery from stenosis due to essential perivisceritis: clinically there will be general disturbances and pains, nausea and vomiting occurring in the true crises. Roentgenologically, compression by the superior mesenteric artery in the erect position shows a distinct arrest of the barium on the median line or a little to the right of it, at the point where the mesenteric pedicle passes in front of the duodenum with marked distention of the third portion and the lower angle of the duodenum. Stenosis of the duodenum due to perivisceritis following gastroduodenal ulcer is best determined by roentgen examination, which will show signs caused by the rigidity of the intestinal wall, wherever adherent, and atony of the segment concerned. Pain during palpation is an important symptom, especially when produced during the attempt to separate the viscera, and is all the more confirmative if it accompanies difficult or impossible dissociation of the suspected viscera. Medical treatment advised for minor obstructions of the duodenum consists in (1) sustaining the abdominal wall by means of a corset, (2) massaging and exercising the abdominal muscles, (3) dorsal decubitus on an inclined plane, holding the head low, and (4) resting after eating. Two generally used operations for periduodenitis are (1) liberation of the duodenum from adhesions, which permit it to reassume its normal form and size, and (2) operation to determine a good evacuation of the gastroduodenal segment situated above the obstacle. In periduodenitis due to ulcer, transmesocolic gastro-enterostomy with section of the adhesions is recommended.

Dermatitis and Precancerous Lesions from Tar in Man.—Bettazzi demonstrates histologically that the action of tar on human skin may cause either atrophy or epidermal hyperplasia. Since tar may cause atrophy of the papilla and of the hair until it disappears, it is natural that tar should act in the same way on the skin. The process of hyperplasia which generally accompanies alterations of the skin is explained by the irritative and proliferative action of the tar on the epidermal epithelium. The principal alteration of the skin, namely, lymphocyte and plasma cell infiltration, can be attributed to a true action of the tar. The author found in the skin of patients the presence of tar granules between the corneal layers in the zone of hyperkeratosis, in the dilated infundibula of the atrophied hair follicles, between the connective fibers of the superficial skin. He found no dermo-epidermal lesions of the exudative type with the presence of polymorphonuclear leukocytes, nor regressive processes habitually occurring in acute infections (pyodermatitis, acne suppurata, folliculitis). Concomitant alterations of the dermal connective tissue consist in the swelling of connective tissue bundles, disappearance of the characteristic fibrillations and alterations of staining affinity. The alterations are especially observed in zones of prominent proliferative activity of the epidermis, which consists in multiple deep epithelial digitations fusing into the derma, in epithelial layers or nests tending to form corneal pearls. The dermal lesions described prepare a basis particularly adapted to the invasion of the epithelial proliferation and it is also probable that in a ground so prepared the epithelial vegetation can easily acquire the morphologic alterations, the atypical characteristics true of cancer. The oncogenous action of tar in man is explained by a chronic irritation of the tissues by which the workmen in continual contact with the tar acquire microscopic and histologic lesions of the skin (chronic dermatitis which can turn to cancer). Of the number of workmen exposed to the action of the tar and its derivatives, only a few contract dermatitis and fewer still cancer. The patients can carry for a long time with impunity the epithelial neoplasms due to tar, demonstrating a relative biologic mildness. During this time they can be cured with opportune surgical aid, but local recurrences and malignant transformations of other cutaneous lesions are possible. The neoplasms are neoformations which, although having the morphologic characteristics of cancer, are differentiated from them clinically by an extremely slow course, by the lack of metastases, and by the complete absence of phenomena reacting on the general economy of the organism; however, in the course of time they can acquire all the biologic characteristics leading to death through metastases and cachexia.

Riforma Medica, Naples

48: 231-268 (Feb. 13) 1932

Evolution and Form of Hydronephrotic Sacs. G. Lucarelli.—p. 233.
Enuresis and Sexual Disturbances Due to Marked Congenital Malformation of Lumbosacral Vertebral Column. F. di Bella.—p. 242.
*Rare Seat of Location of Echinococcus Cysts. A. Cioffi.—p. 254.

Echinococcus Cysts.—Cioffi explains the presence of echinococcus cysts in the bladder by embryos which, after having overcome the resistance of the porta and the pulmonary capillaries, constituting two filters of the portal and general circulation in the capillary reticulum of both the liver and the lungs, remain in the circulation and are arrested at some point of the organism, especially where the circulation is terminal. The parasites in the liver and lungs produce germinating cysts, while those that pass through the barrier of the pulmonary capillaries are smaller and produce acephalocysts. Contrary to what happens in the case of blood vessels which are gradually obliterated by endarteritis and endophlebitis, mucous canals included in the cystic walls do not tend to obliterate themselves. Despite their flattening, they remain permeable until compressed by the parasite, because their epithelium prevents fusing of their walls. This explains the elimination of hydatid detritus by the large excretory tubes (bronchi, bile duct and ureter).

Archiv für Kinderheilkunde, Stuttgart

96: 65-128 (April 8) 1932

*Esophageal Spasm in Children. Maria Sudhues.—p. 65.
Frequency of Tuberculous Infection Among School Children of Pécs (Hungary). L. von Dobszay and G. Petrányi.—p. 88.
*Favorable Outcome of General and Pulmonary Tuberculosis with High Fever During Childhood. G. Paschlau.—p. 94.
Pseudotetanus Escherich an Encephalitis? Maria Niermann.—p. 108.

Esophageal Spasm in Children.—Sudhues reviews the literature on esophageal spasm in children and then reports four new cases, in two of which there was a constitutional inferiority. She is convinced that careful examination, particularly with roentgen rays, will reveal that a spasm of the esophagus is frequently the cause of vomiting. She differentiates between primary and secondary spasms. The secondary spasms may occur in normal children following an injury or an inflammation of the esophagus. However, the primary spasm is probably due to a congenital inferiority of the sympathetic nervous system; namely, to a disturbance in the vagus or in the intramuscular plexus of the esophagus. The primary spasm is in nearly all cases in the lower third of the esophagus. A satisfactory explanation for this localization has not been found as yet. It has also been observed that the primary spasms are more frequent in boys than in girls. A group of cardiospasms with dilatation of the esophagus that occurs during the first year of life is explained as resulting from the abolition of the opening reflex of the cardia, which in turn is due to an injury of the vagus. This theory of pathogenesis is based on studies by Ylppö, Tamiya and Rieder.

Favorable Outcome of General and Pulmonary Tuberculosis with High Fever During Childhood.—Paschlau points out that among the patients in children's hospitals one occasionally sees children with new severe tuberculosis, with a poor general condition and with high fever, for whom the prognosis is apparently unfavorable. With surprise one notices in a number of these children that the high fever, which has persisted for several months, gradually subsides and that severe disseminated processes and focal or infiltrative pulmonary processes gradually regress and finally end in recovery. The author reports the case of a girl, aged 2½, in whom there was high fever and a miliary tuberculous dissemination with some typhoid-like symptoms. A second patient was a girl, aged 2, who had a subacute miliary tuberculosis. During the beginning stage the pulmonary symptoms predominated, and later numerous metastases developed in the bone system. He reports the cure of a nursling who had chronic torpid miliary tuberculosis with intercurrent epituberculosis of the lung. The fourth patient was a girl, aged 11, with pulmonary infiltration and high fever that lasted four months. The girl recovered. In regard to the treatment of hematogenic miliary tuberculosis, there is little to be done. He warns against irritation therapy in any form, ray therapy, and the injection of tuberculin or of nonspecific protein.

Archiv für klinische Chirurgie, Berlin

169: *597-796 (April 8) 1932*

*Causal Significance of Gastric Juice and of Condition of Hunger in Gastritis Following Simulated Feeding. H. Puhl.—p. 597.
Clinical Aspects and Therapy of Perforated Ulcers of Stomach and of Duodenum. O. Hoche and G. Marangos.—p. 626.
Free Transplantation of Omentum. P. Rosenstein.—p. 639.
Three Decades of Plastic Use of Paraffin. H. Eckstein.—p. 646.
*Is It Permissible to Perform a Surgical Intervention During Menstrual Period? A. Popova.—p. 675.
Xanthomatous Giant Cell Granuloma of Sheath of Tendon. W. Sprenger.—p. 683.
Desmoids and Sarcoma of Abdominal Wall. Z. W. Mankin.—p. 688.
*Percutaneous Nailing of Dislocated Fragment of Lower End of Tibia. F. Felsenreich.—p. 712.
Wound Healing Following Electrosurgery. G. von Magyary.—p. 737.
Indications for and Technic of Operative Closure of Fistula of Small Intestine. G. Tschmarke.—p. 754.
Exophthalmic Goiter with Low Basal Metabolism. A. Troell.—p. 774.
Elephantiasis of Plastic Skin Graft on Thumb. F. W. Wichmann.—p. 783.
Furuncle of Face and Thrombosis of Cavernous Sinus. O. Schumacher.—p. 789.

Causal Significance of Gastric Juice and of Hunger in Gastritis.—Puhl reports his observations during simulated feeding of esophagostomized dogs. He employed the technic of Pavlov and Silbermann, who produced gastric and duodenal ulcers by simulated feeding. The author is convinced that the causal factor of the degenerative processes resulting from the experiment is the hypersecretion of the gastric juice. He proved this by withdrawing the gastric juice produced during simulated feeding and then introducing it into a dog that had not been esophagostomized but lived under normal conditions. He observed that in this dog there were signs of degeneration and even extensive erosions of the mucous membrane of the fundus of the stomach, although they were of a somewhat lesser degree than in the esophagostomized dogs. He thinks that this experiment proves conclusively that a healthy gastric mucous membrane can be impaired by a hyperacidic gastric juice. That the condition of starvation is likewise a causal factor of the degenerative processes was proved by starvation and thirst tests on dogs that had not been esophagostomized. In these dogs there was a high degree of gastric acidity even when the dogs no longer showed a desire for the meat that was shown to them. The tissue changes in the gastroduodenal mucous membrane during starvation resemble those in the esophagostomized dogs but are of a somewhat lesser degree.

Surgical Operations During Menstrual Period.—In order to detect the influence exerted by surgical trauma during menstruation, Popova made careful observations on women in whom an operation was urgent and could not be postponed until after the menstruation. The favorable course of the postoperative wound healing observed in these cases induced him to operate on women during the menstrual period also when the intervention could have been postponed. On the basis of observations in fifty cases he reaches the following conclusions: In menstruating women there is a more intense stimulation of the hematopoietic apparatus than in women who are operated on during the intermenstrual period. This increased stimulation becomes manifest in a more pronounced leukocytosis and in a greater deviation to the left in the hemogram. These manifestations are especially noticeable in cases in which general anesthesia is employed. The coagulability of the blood increases under the influence of the surgical intervention in menstruating women in the same degree as in nonmenstruating women. The danger of a hemorrhage during the intervention is of no great significance, in spite of the fact that thrombopenia develops in some cases. Provided the intervention is not of an especially serious nature, the menstruation does not cause complications during the postoperative course. In view of the biologic peculiarities of the menstrual period it is advisable to avoid serious, long lasting surgical intervention, unless an immediate intervention is absolutely necessary. However, less complicated and minor interventions are not contraindicated during menstruation.

Percutaneous Nailing of Dislocated Fragment of Lower End of Tibia.—According to Felsenreich, luxation fractures in the upper portion of the ankle joint with avulsion of longitudinal portions of the tibia have a tendency to reluxation, in that the fragment becomes dislocated again, a condition that is designated as "wandering talus." Treatment with a plaster-of-paris cast, following manual reposition, gives good results in some cases; however, in many instances it is followed by secondary dislocation and leads to permanent difficulties. The simple extension treatment, which accomplishes reposition by slow traction, avoids serious permanent impairment but leads to step formation in the joint by causing a slight displacement of the talus and posttraumatic arthritis. Böhler's procedure of reposition by screw traction in the plaster-of-paris cast and subsequent permanent extension secures ideal primary results, but in severe cases the fragments cannot be permanently retained in the correct position. For this reason the author combined the latter method with the percutaneous nailing of the detached fragment with the aid of a wire, which is tightly stretched and fastened on the plaster-of-paris cast. This procedure prevents the secondary displacement of the fragment, and the final results meet all expectations by reestablishing normal anatomic as well as functional conditions.

Deutsche medizinische Wochenschrift, Leipzig

58: 605-644 (April 15) 1932

*"Epiphrenal Syndrome": Its Relation to Angina Pectoris and to Cardiospasm. G. von Bergmann.—p. 605.
Hiatus Hernias from Point of View of Roentgenologist. W. Knothe. —p. 609.
Bacillus and Clinical Aspect of Tuberculosis. W. His.—p. 612.
Position of Banti's Disease in Modern Clinical Medicine. W. H. Veil. —p. 615.
Relation of Method and Means to Interruption of Pregnancy. K. Abel. —p. 620.
Severe Polyneuritis Following Use of Abortifacient. H. Jagdhold. —p. 623.

Relation of "Epiphrenal Syndrome" to Cardiospasm.—Von Bergmann challenges the old theory of cardiospasm. He questions both that it is a spasm and that it is a disturbance of the cardia. In ten of seventeen cases of so-called cardiospasm, he observed that when in roentgenoscopy a maximal filling of the esophagus was avoided a winding structure was noted above the diaphragmatic hiatus, and he thinks that this is a portion of the stomach, for if in such cases the cardia is searched for, it is far above the diaphragm. The author points out that both vagi go through the esophageal hiatus of the diaphragm, and that pressure or pulling at this site may cause vagal and also sympathetic reflex phenomena, for the two vagi contain not only centrifugal vagal fibers but also centripetal fibers and sympathetic fibers. The author cites experiments in which a balloon was introduced into the esophagus where it passes through the diaphragmatic hiatus. It could be observed that the coronary circulation was considerably inhibited as the result of the pressure on the vagi. If angina pectoris is caused by a disturbance in the coronary circulation, as is assumed by some, this experiment would explain the angina pectoris of the gastrocardial syndrome. Other conditions that the author thinks are due to pressure in the diaphragmatic hiatus are gastric vertigo, many cases of periodic hiccup, also aerophagy and nervous eructation. The author considers the cases in which he observed a portion of the stomach above the diaphragm not as true diaphragmatic hernias but rather as transluxations caused by a contraction of the longitudinal muscles of the esophagus. This theory of pathogenesis is corroborated by the frequency of the phenomenon as secondary disease following peritoneal vomiting, ileus, gallstone colic and postoperative conditions. However, it is not definitely known as yet how often transluxation of the stomach actually exists and the author prefers the term "epiphrenal syndrome," which is more general and which may have various forms of manifestation. In regard to the treatment, he states that those measures are suitable which are resorted to in cases of the gastrocardial syndrome. He also thinks that special diaphragmatic gymnastics might prove helpful. Surgical intervention is necessary only in the severest cases.

Deutsche Zeitschrift für Chirurgie, Berlin

235: 537-680 (April 7) 1932

Development of Electric Fields in Muscular Activity. H. Hartmann and A. von Danckelman.—p. 537.
Determination of Fat Content of Blood. H. L. Popper and R. Scholl. —p. 565.
Combination of "Avertin" Basic Anesthesia with Ether, Nitrous Oxide and Ethylene. H. Widenhorn.—p. 573.
Disturbances of Carbohydrate and Acid-Base Economy and Gas Exchange in "Avertin" Anesthesia and Their Modification by Oxygen and Carbon Dioxide Reinhalation. H. Fuss and E. Derra.—p. 587.
Lumbar Anesthesia. W. Rabinowitsch.—p. 599.
Roentgenography of Vascular System. T. Wohlleben.—p. 607.
*Relation of Osteitis Fibrosa Generalisata (von Recklinghausen) to Parathyroids. F. W. Wichmann.—p. 619.
*Diagnosis of Acute Appendicitis: Especial Consideration of Rovsing's Sign. C. Wallerström.—p. 635.
Arch-Shaped Incision and Inguinal Hernia Operation. L. Drüner. —p. 652.
Inguinal Hernia Operation: Results of Reexamination in Four Hundred and Sixteen Cases. H. Ledermann.—p. 658.
Hemorrhagic Diathesis Without Icterus in Complete External Biliary Fistula. E. Heller.—p. 667.
Extirpation of Spleen in Myelogenous Leukemia. J. Kuhle.—p. 674.

Relation of Osteitis Fibrosa Generalisata and Parathyroids.—Wichmann describes a case of osteitis fibrosa generalisata (von Recklinghausen) in a woman, aged 45. Following removal of an intrathyroidally located adenoma of the parathyroid from the left side of the thyroid, which was slightly enlarged, there was a progressive improvement in the general condition, and the greatly changed calcium metabolism returned to normal. This case again brings out the close relations of osteitis fibrosa generalisata and the parathyroids and shows that surgical removal of a pathologically changed parathyroid, even if it is intrathyroidal and only slightly enlarged, can achieve a successful result. This case also shows the importance of a thorough examination of the thyroid to locate the parathyroids when these appear to be absent. A wedge-shaped excision of any suspicious portion of the gland, especially on the posterior wall, is advised.

Rovsing's Sign in Diagnosis of Acute Appendicitis.—Wallerström discusses the Rovsing sign in acute appendicitis and calls attention to its diagnostic value. Rovsing's sign consists in a sensation of pain on the right side of the abdomen at the site of the appendix evoked by light pressure in the left iliac fossa. The author procured the best results by slowly pressing the soft parts over the colon downward with the fingertips and then quickly releasing them. The sensation of pain at the site of the appendix occurs at the instant of release. Perman's method of light downward pressure in the left iliac fossa in the direction of the right side of the abdomen was also used with better result than the original pressure and massage method of Rovsing. Investigations were made in 211 operative cases of acute appendicitis. Rovsing's sign was exhibited by 70 per cent of the cases. Rovsing's sign was positive in a higher percentage of cases in gangrenous appendicitis than in simple appendicitis. Of the other appendicitis symptoms, only pain on the right side of the abdomen and direct local pressure sensitivity in the right iliac fossa compare with Rovsing's sign in frequency. Rovsing's sign is frequently positive when other appendicitis symptoms are negative. It is probably evoked by a pressure transmitted from the left to the right side of the abdominal cavity and is probably comparable to direct pressure sensitivity although the mode of producing the pressure is somewhat different. The occurrence of Rovsing's sign is probably favored by a medial or lateral position of the appendix. The sign is not specific for appendicitis, as it may be found in other localized disturbances of the peritoneum. It is a means of differential diagnosis between extraperitoneal and intraperitoneal disease conditions. Negative result of Rovsing's sign does not exclude appendicitis, but a positive Rovsing's sign is a valuable aid to diagnosis and indicates that the pathologic changes are in the appendix. There are cases in which the positive Rovsing sign is the only unequivocal symptom of appendicitis.

Monatsschrift für Kinderheilkunde, Berlin

52: 261-468 (March 23) 1932. Partial Index

*Vaccine Therapy of Whooping Cough. E. G. Westendorff.—p. 261.
*Idem. H. Gentzsch.—p. 273.
Treatment of Whooping Cough. E. A. Voss.—p. 287.
Percentage of Children Having Had Scarlet Fever: Epidemiologic Significance of That Percentage. G. Fedders.—p. 294.
Physical and Mental Action Capacity of Girls in Elementary Grades in Relation to Their Constitution and Health. Else Liefmann.—p. 305.
*Etiology of Necrosis of Subcutaneous Adipose Tissues of the New-Born. E. Unshelm.—p. 321.

Vaccine Therapy of Whooping Cough.—Numerous reports of experiments with nonspecific protein therapy in whooping cough induced Westendorff to try this treatment in fifteen cases of the disease. In intervals of from two to three days he injected increasing doses of a polyvalent gonococcus vaccine, but there was no noticeable change in the course of the disease. Several months later the author treated twenty whooping cough patients with a specific whooping cough vaccine. Only in two of these children was the whooping cough favorably influenced; in all others the treatment was ineffective. In a case of tuberculosis of the bronchial lymph nodes, in which whooping cough vaccine was given to prevent whooping cough, it developed nevertheless two weeks after the first injection. However, in view of other favorable reports in the literature, and considering the two cases of his own observation, the author does not feel justified to consider the vaccine therapy of whooping cough as entirely valueless. He considers as a distinct disadvantage that in most cases whooping cough is not recognized until it has fully developed but he hopes that, eventually, careful consideration of the anamnesis, examination of the hemogram (increased number of leukocytes) and perhaps also bacteriologic examination may permit an earlier diagnosis. He hopes that, if the vaccine therapy is begun in the earliest stages, it may prove more effective.

Vaccine Therapy of Whooping Cough.—Gentzsch employed both a mixed whooping cough vaccine and a pure vaccine. The mixed vaccine contained mainly Bordet-Gengou bacilli but also pneumococci, streptococci, staphylococci, influenza bacilli and Micrococcus catarrhalis. The pure vaccine contained only Bordet-Gengou bacilli. Both vaccines were given in increasing quantities. Among forty-eight children who were treated with these vaccines, the author observed twenty-six in whom the duration of the disease was shortened. The course was the shorter, the earlier vaccination was begun. In children with complications the shortening was less, and in nurslings the vaccine had no effect. Early treatment was successful in a few cases. Secondary effects, such as local reactions, increase in temperature, increased frequency and intensity of the attacks of coughing during vaccination but also a favorable influence on the state of nutrition were observed in several of the cases. When larger doses of vaccine were given, the actions were the same as those observed with the usual doses. Three of the children who underwent the vaccine therapy died. However, two of these fatalities occurred six months after the vaccination, and these children had miliary tuberculosis; the third fatality resulted from a meningitis that developed on the day following the second injection of vaccine.

Necrosis of Subcutaneous Adipose Tissues of the New-Born.—Unshelm states that the majority of those who have studied necrosis of the subcutaneous adipose tissues in the new-born think that it is caused by a trauma, particularly by a birth trauma, but there are also some who dispute this etiology. The author reviews a case history from the literature, in which the necrosis of the subcutaneous tissue of the new-born was identical with the fat necrosis in adults, which is often an accompanying symptom of a pancreatic disorder. However, in adults there are also fat necroses that are not of pancreatic origin, and these are often ascribed to traumatic causes. The etiology of the necrosis of the subcutaneous adipose tissue in the new-born is still not definitely decided, but the following are the factors that have been cited to prove a traumatic origin: 1. In the majority of the cases that have been described in detail the birth had been difficult, the infants had been more or less asphyctic, and besides this other birth traumas were present. 2. The mothers were usually old, corpulent primiparas. 3. The infants were generally large and heavy and had a well developed subcutaneous layer of fat. 4. True traumatic changes, such as the so-called forceps infiltrates, were found similar to the necrosis of the subcutaneous adipose tissues. 5. The children were frequently exposed to intensive cooling, and by artificial cooling it was possible to produce similar changes. However, the following factors have been cited against the traumatic origin: 1. Incongruity between the trauma to be expected and the actual trauma. 2. The occurrence in apparently easy spontaneous confinements. 3. The symmetrical localization. 4. The missing histologic proof that the forceps infiltrates and the indurations resulting from cooling are identical with the necrosis of the adipose tissues. Before discussing the pro and con of the traumatic etiology, the author describes five cases of his own observation. In spite of the fact that the last described case has several characteristics that speak against a traumatic origin, the author considers such an etiology nevertheless possible. He thinks that the impaired circulation as a result of detachment of the placenta may have caused the necrosis in this case, and in general he inclines to the theory of a traumatic etiology; but he considers a correction of the opinions about the harmlessness of the birth process of greater importance than a theory on the etiology of the necrosis of the subcutaneous adipose tissue in the new-born.

Zentralblatt für Chirurgie, Leipzig

59: 833-928 (April 2) 1932

*Pharmacologic and Bacteriologic Tests of Iodoform Gauze. C. Franz.—p. 834.
Removal of Blood and Lymph in Conditions of Stasis. R. Klapp.—p. 840.
Technic of Esophagogastrostomy. E. K. Frey.—p. 845.
*Successful Replacement of Knee Joint in Congenital Defect and Pseudo-Arthrosis of Femur by Turned Ankle Joint. R. Demel and E. Gold.—p. 848.
Intravenous and Transvesical Pyelography. H. Boeminghaus.—p. 852.
*Spontaneous Separation of Entire Omentum with Secondary Partial Torsion Without Noticeable Clinical Manifestation. P. Esau.—p. 863.
Surgical Pathology of Multiple Neurinomas. H. Klose and J. Schneider.—p. 868.
Traction Bandage for Wrist Joint and Lower Arm. W. von Gaza.—p. 873.
Choice Between Sacral and Abdominosacral Operations in Carcinoma of Rectum. O. Goetze.—p. 878.
Two-Stage Method in Surgical Treatment of Carcinoma of Rectum. A. W. Fischer.—p. 887.
Experiences with Cholangiography. F. Sturm.—p. 891.
Roentgen Diagnosis and Therapy of Hypertrophic Pyloric Stenosis Following Chronic Gastritis. R. Wanke.—p. 896.
Covering of Traumatically Produced Substance Defects of Scalp. K. Flick and E. Traum.—p. 908.
Thrombosis and Pulmonary Embolism Following Intravenous Continuous Drop Infusion. L. Strauss.—p. 909.

Pharmacologic and Bacteriologic Tests of Iodoform Gauze.—In summing up the results of his pharmacologic and bacteriologic tests, Franz states that the iodoform content of the gauze in many instances is not what it is declared to be. The discrepancy is frequently considerable in gauze that has been stored for some time, as well as in that which has been produced more recently. The wrapping of iodoform gauze is significant for its content in iodoform as well as for the sterility. Wrapping in wood fiber paper that is free from sulphide and in thick, black parchment paper appears most suitable, but the author considers a third covering with cellophane advisable. The question whether and how long pathogenic organisms can live in iodoform gauze has as yet not been definitely decided, but it is probable that the bactericidal power increases with the iodoform content. However, in spite of the greatest care in the preparation of iodoform gauze, it cannot be entirely sterile for the finished product cannot be sterilized by steam. Whether the iodoform gauze that appeared to be sterile was actually sterile must be questioned, since free iodine may have inhibited the growth of the bacteria. The author recommends that efforts should be made to replace iodoform gauze by a gauze that, following impregnation with a disinfectant, can be sterilized. He suggests several disinfectants that might be used, but it is as yet not proved whether these disinfectants have the same hemostatic and deodorizing effects as iodoform.

Successful Replacement of Knee Joint by Ankle Joint.—In the case reported by Demel and Gold, the right leg of a person, aged 22, had been atrophied since birth. The atrophy involved mainly the femur. The prosthesis that the patient wore was unsatisfactory in that it did not permit bending in the region of the normal knee joint. To overcome this difficulty the authors resorted to an operation that had first been done by Borggreve in 1929, namely, replacement of the knee joint by the ankle joint, after the latter had been turned round. Thus the ankle joint acted in the direction of the knee joint and permitted the wearing of a prosthesis that was movable in the knee joint. The operation was done in two stages and the results were entirely satisfactory.

Spontaneous Separation of Entire Omentum.—Esau describes a disorder that so far has not been reported; namely, detachment of the omentum and torsion of a narrow strip. With the exception of a slight irritation of the peritoneum, which became manifest in the later stages and which was interpreted as appendicitis, there were no clinical manifestations. The patient was a lumber worker, aged 47, who was brought to the hospital with the signs of a not entirely typical appendicitis and who reported that about two months previous he had had a similar attack, which, however, had disappeared again following three days of rest in bed. Since during the second attack there were no severe symptoms that necessitated an immediate operation, an expectant attitude was assumed and the symptoms disappeared again. However, a surgical intervention was recommended to the patient, and he consented. The operation revealed that the omentum was detached and had become implanted between the ascending colon and the lateral abdominal wall, where it had formed adhesions with the adjoining tissues. Upward it reached to the liver, and below it ended in a pedicle, which showed torsion and the point of which was fastened near the inguinal ring on the right side. The entire omentum with the exception of the narrow attachment had become necrotic. The omentum was removed and the recovery was uneventful. The operative specimen weighed 1,100 Gm. The author describes the results of the histologic examination and in discussing the case history he states that the patient had an inguinal hernia on the right side. He considers this factor significant for the etiology, since persons with inguinal hernia of the right side are predisposed to torsion of the omentum.

59: 929-992 (April 9) 1932

Are There Failures in Preoperative Iodine Treatment of Exophthalmic Goiter According to Plummer-Boothby? A. W. Meyer and C. Atanasof.—p. 930.
*Action of Calcium in Threatening Case of Pulmonary Infarct. R. Hubrich.—p. 934.
Encysted Pseudohernia. A. Oberst.—p. 935.
*Distinct Sign of Certain Fractures of Scapula. A. Comolli.—p. 937.
Drill for Extension Treatment. H. Edelmann.—p. 940.
Chemicals in Organs Following Fatality After Basic Anesthesia with "Avertin." L. Schönbauer and R. Links.—p. 941.
Idem. F. Tiemann.—p. 943.
Thrombosis of Portal Vein Following Operation for Inguinal Hernia. W. Wolf.—p. 945.
Rôle of Vena Azygos and of Vena Hemiazygos in Development of Several Pathologic Processes. A. S. Wischnevsky.—p. 946.
Pyosalpinx in Inguinal Canal with Aspects of Nonreducible Inguinal Hernia. E. Fauvet.—p. 950.

Action of Calcium in Pulmonary Infarct.—Hubrich relates that in a postoperative, embolic, hemorrhagic infarction of the lung, timely intravenous and intramuscular injection of normal calcium gluconate had a life saving effect. He emphasizes the complete absence of reaction in intravenous as well as intramuscular injections. He therefore advises the use of calcium gluconate as a hemostatic, especially in nervous patients with severe hemorrhages and with threatening collapse.

Distinct Sign of Certain Fractures of Scapula.—Comolli points out that the diagnosis of fractures of the surgical neck of the scapula is considered difficult. Because of the lack of distinct signs and because of the nearness of the joint it cannot be readily differentiated from a contusion, from a luxation of the scapula, and from fractures of the upper end of the humerus. Most authorities think that for a definite diagnosis roentgenoscopy is necessary. However, the author observed an unmistakable sign, on which the diagnosis of fracture of the scapula, more particularly fracture of the surgical neck, can be based with certainty. This sign is a typical swelling, which develops in the region of the involved scapula shortly after the trauma. The swelling, which indicates the triangular outline of the scapula, is due to the fact that blood from the fracture gathers before as well as behind the scapula. As a result of the peculiar anatomic conditions this blood cannot escape and a cushion-like swelling, corresponding to the outline of the scapula, is the result. The author cannot state with absolute certainty whether this sign is noticeable in all cases, though in view of the manner in which it develops, this is probable; but in compound fractures with considerable tearing and displacement, it may not be so noticeable.

Rocznik Psychiatryczny, Warsaw

17: 1-260 (Jan.) 1932

Biology of Spirochaeta Pallida R. Weigl.—p. 1.
Dementia Paralytica and Syphilis of the Organs. W. Nowicki.—p. 14.
Histopathology of Dementia Paralytica. R. Dreszer.—p. 26.
Histopathology of Syphilis of Central Nervous System. Z. Messing.—p. 53.
Correlation of Clinical Picture and Constitution in Syphilitic Psychoses. W. Matecki.—p. 81.
Constitutional Types of Patients in Dementia Paralytica. J. Kirschner.—p. 100.
*Catatonic Syndromes in Dementia Paralytica. B. Bornstein.—p. 104.
Influence of Malarial Therapy on Permeability of Meninges in Dementia Paralytica. J. Dretler.—p. 121.
Treatment of Dementia Paralytica. E. Artwiński and A. Gradziński.—p. 157.
Research on Experimental Syphilis. (Superinfection in Tertiary Syphilis). J. Lenartowicz.—p. 218.

Catatonia in Dementia Paralytica.—Bornstein describes five cases of young adults with dementia paralytica and with catatonic syndromes. He points out the insufficiencies in the theories relating to these syndromes. The psychologic theory (Boestroem) is founded on disturbances of volition and on the analogy with normal life, but it omits the causes of catatonia. The anatomic theory (Wernicke, Kleist, Satio, Kalnin) is not yet uniformly elaborated. From the latest investigations, however, it appears that anatomic changes, alone, cannot be considered as fundamental factors in exciting catatonia in dementia paralytica. De Jong and Baruk see in this syndrome an expression of intoxication, undefined as yet but attacking in the first place the cortex of the brain. The author thinks the last standpoint to be acceptable, namely, that the infection in young adults causes humoral changes, as yet unknown, which by their action on the cortex may, in certain predispositions, provoke catatonic syndromes.

Kazansky Meditsinsky Jurnal, Kazan

28: 1-100 (Jan.) 1932. Partial Index

*Local Anesthesia in Surgery of Biliary Tract. A. V. Vishnevsky.—p. 57.
*Tying Fallopian Tubes and Subsequent Permeability. Kh. Kh. Meshcherov.—p. 66.

Local Anesthesia in Surgery of Biliary Tract.—Vishnevsky states that, in typical cases of disturbance of the biliary tract with a definite diagnosis, the operation of choice consists of an incision downward from below the ribs; in patients with a questionable diagnosis and an obscure clinical picture with regard to the biliary system, necessitating an abdominal exploration, the operation of choice consists of a median incision and local anesthesia according to the method described in the *Kazanskiy Meditsinskiy Jurnal*, 1929, number 9. He believes that local anesthesia makes possible a subserous cholecystectomy and subsequently an hermetic closure of the abdominal incision. Preliminary anesthesia of the gallbladder makes possible a subserous cholecystectomy which under ordinary conditions may be difficult or impossible. In cholemic patients with an intact wrinkled gallbladder containing calculi, transduodenal choledochotomy as well as tying of the cystic duct is the only intervention that makes it possible not only to regulate the passage of the bile into the intestine but also to close hermetically the abdominal incision. The author believes that his method of local anesthesia decreases the chances of hemorrhage. Mobilization of the duodenum and the head of the pancreas makes this intervention quite simple. The method of progressive infiltration anesthesia together with diffuse impregnation of the tissues not only makes orientation of tissues less difficult but aids in the exposure of the gallbladder and bile ducts, simplifies the subserous isolation of the gallbladder, increases the view of the duodenal area, enables a more careful exploration of the ducts, and makes possible a bloodless mobilization of the duodenum and the head of the pancreas.

Tying Fallopian Tubes and Subsequent Permeability.—Meshcherov describes the technic, the microscopic observations and the general results in the tying of the fallopian tubes in twenty-six female rabbits. Although he does not believe that the results in animal experiments can be carried over to human beings, he concludes that an operation with tying of the fallopian tubes as a method of sterilization of women cannot entirely guarantee against subsequent conception and therefore should not be used for that purpose. In view of the large number (nineteen of his rabbits) of instances of atresia of the tubes, the author concludes that obliteration of the fallopian tubes does not prevent permeability. Closure of the opening at the site of the ligature and subsequent obliteration of the fallopian tubes may be the cause of the yearly increase in the number of ectopic pregnancies.

Terapevtichesky Arkhiv, Leningrad

10: 1-96, 1932

Clinical Aspect of Syphilitic Insufficiency in Aortic Valves. Ya. E. Shapiro.—p. 3.
Changes in Form of Electrocardiogram When Taken Two at a Time. M. L. Soliterman—p. 12.
*Definite Doses of Digitalis in Various Cardiac Disturbances. D. M. Abdulaev.—p. 21.
Heart and Tuberculosis of Lungs. I. A. Levenson and A. G. Naishtat.—p. 33.
Blood Picture in Endocarditis Lenta. K. A. Dryagin and N. V. Inyushkin.—p. 46.
Cardiodiaphragmatic Symptom Complex in Relation to Accumulation of Gases in Left Hypochondrium. S. I. Lurie and B. M. Shtern.—p. 55.
*Pituitary Extract in Treatment of Gastric Ulcer and Hypersecretion. M. Yu. Rapoport.—p. 65.
Clinical Aspect of Epidemic of Influenza in Leningrad, 1926 to 1930. V. N. Lejnev.—p. 73.
*Constancy in Basal Metabolism. D. Rozenblum.—p. 82.
Alimentary Glycemic Curve and Physical Fatigue. I. B. Shulutko.—p. 84.
Diuretic Action of Merbaphen and Mersalyl. B. Shklyar.—p. 92.

Doses of Digitalis in Cardiac Disturbances.—Abdulaev examined the histories in 500 cases of cardiac disturbance treated with digitalis (pulvis foliorum digitalis) during one year or longer. The material was divided into three groups: Group 1 consisted of patients with decompensated mitral lesions complicated with fibrillary arrhythmia; group 2 was similar to group 1 but the patients had normal cardiac rhythm; group 3 consisted of patients with cardiosclerosis with cardiac insufficiency and fibrillary arrhythmia or normal rhythm. In conclusion the author states that treatment at the onset should consist of large doses of digitalis (0.1 Gm. three times a day) in order to store a sufficient quantity of the drug in the organism. This dose does not have to be administered over a prolonged period; in most cases, sufficient action is evident after from five to six days' treatment. It is necessary to decrease the dosage gradually to 0.05 Gm. two or three times a day and to bring about a bradycardia of from 60 to 70 beats a minute. If the heart beats decrease to less than 70 a minute, it is advisable to interrupt the digitalis for three or four days. Further treatment should consist of doses such that daily administration over a long period would be effective without evidence of toxicity. The author finds this dose to be from 0.1 to 0.15 Gm. a day, depending on the individual. In the treatment of patients with valvular lesions but without fibrillary arrhythmia this may be the beginning dose, but for maintaining the effect a larger dose is necessary (0.05 Gm. three times a day to 0.1 Gm. twice a day). In arteriosclerotic cardiosclerosis it is necessary to remember that digitalis may cause cardiac spasm, degenerative changes in the myocardium and changes in the impulse of the cardiac system.

Pituitary Extract in Treatment of Gastric Ulcer.—Rapoport states that disturbances in the function of the gastro-intestinal tract may be understood through the study of the neuroglandular apparatus; that is to say, the endocrine glands and the sympathetic nervous system. Believing that the posterior lobe of the pituitary body influences gastric secretion, the author studied the results following the injection subcutaneously of 1 cc. of solution of pituitary, once a day, twenty minutes before the main meal, and the treatment continued for from four to six days. Examinations made at various intervals after the first injection included a determination of the gastric acidity and the free hydrochloric acid and a study of the secretory and motor functions. He concludes that solution of pituitary results in a decrease in the gastric acidity and the free hydrochloric acid under normal and fasting conditions. In some instances the decrease in acidity is apparent only after several injections (the first may sometimes increase the acidity). The changes in the acidity remain after the treatment has been discontinued. Treatment with solution of pituitary does not bring about those changes in gastric motor activity that would contraindicate such treatment, nor do the doses used cause any accidents. The author does not claim specificity for this treatment; however, since solution of pituitary has the power to inhibit secretion it can be efficacious in the treatment of ulcers, through humoral and especially nervous influence on gastric secretion.

Constancy in Basal Metabolism.—Rozenblum states that he finds no uniformity in the literature with regard to constancy of basal metabolism in the same patient over a prolonged period of time. On himself and a laboratory assistant, he recorded the caloric energy required for twenty-four hours and found that the variations during one year ranged from 10 to 15 per cent of the original value. He believes that fluctuations in the metabolic rate due to objective and subjective stimuli should be considered in clinical diagnosis and that the basal metabolism should be observed not at one but at several examinations.

Bibliotek for Læger, Copenhagen

124: 79-113 (March) 1932

Causes of Blindness in Faroe Islands. R. K. Rasmussen.—p. 79.
*Demonstration of Bacillemia. J. Holm.—p. 92.
*Clinical Investigations on Temperature of Skin, Especially in Tuberculosis of Joints and Bones. J. Foged.—p. 107.

Demonstration of Bacillemia.—In 208 patients, mainly with tuberculous disease, Holm failed to demonstrate tubercle bacilli in the blood on cultivation according to Löwenstein's method; in forty-two of these, tubercle bacilli could not be demonstrated by simultaneous inoculation of the precipitate in guinea-pigs. In eighteen patients with progressive pulmonary tuberculosis in the third stage, bacillemia was not demonstrable by direct inoculation of the blood in guinea-pigs and cultivation in Besredka's substrate. In thirty-nine patients, chiefly with tuberculous disorders, the blood was examined after treatment with citrated water; tubercle bacillemia was established in two cases. The author concludes that tubercle bacillemia is not a frequent occurrence in tuberculous disease.

Temperature of Skin, Especially in Tuberculosis of Joints and Bones.—Foged states that in cases of active tuberculosis of the knee, ankle and foot there is an abnormal local increase in the temperature of the skin. In tuberculosis of the elbow, wrist and hand the symptom is less constant. The numerical value of the symptom corresponds to the degree of the disease. Measurement of the local temperature of the skin is only a supplementary examination, to be evaluated in relation to the other clinical results.

Ugeskrift for Læger, Copenhagen

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Nervous Patients and Their Treatment. C'cn. P. Levison.—p. 327.
*Investigations on Mortality from Diphtheria in Different Seasons. P. H. Andresen.—p. 335.
Ambulatory Treatment of Tuberculosis of Skin. J. Olesen.—p. 339.

Mortality from Diphtheria in Different Seasons.—Andresen's examination of the annual official health reports for Copenhagen for the last thirty years showed the mortality from diphtheria to be definitely higher in March, April and May than during the rest of the year. Study of the diphtheria case reports from Blegdam Hospital for one year also revealed a notably increased mortality in the spring months, the relative variations during the year closely agreeing with those shown in the health report for the same year.

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SURGICAL VISION

CHAIRMAN'S ADDRESS

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"The present is in every age merely the shifting point at which past and future meet and we can have no quarrel with either." In these words of Havelock Ellis there is contained the germ of an inspiration which should find lodgment and growth in the consciousness of all who are deeply concerned with their work in life. Therein is expressed the true conception of what men call vision. This means literally seeing backward, seeing now and seeing forward, and then harmonizing the relations of each objective. Just as in ocular vision one does not see with the eye but with the brain, so in the larger realm vision depends on the higher virtues of character, philosophy, discernment and understanding.

For the surgeon, vision is a vital requirement. The ability to see behind, through and beyond the problems presented to him is the true test of his mastery of his profession. Unless he knows something of what has gone before him, he knows very little of what is going on around him, and can hardly visualize what may come to him. Preparation, training and experience, the necessary factors in the surgeon's equipment, are but part and parcel of a refining process, pointing to that perfection of vision which is wrapped up in knowledge of the past, realization of the present and foresight of the future.

The study of surgical history furnishes a bountiful background for the development of a career, and, as history is largely biography, an intimate acquaintance with the worthies who have gone before brings a satisfying sense of struggle that denotes success. Not otherwise could one learn that often the true is not new and the new is not true. The evolution of surgery has had its ups and downs, slow at times, rapid at others, and even recently accelerated developments will soon become ancient history. Some of those who predicted that there were no more surgical worlds to conquer lived to see their prophecies nullified. Past performances are stepping stones, not the journey's end. Likewise, the literature of surgery, especially that in periodical form, yields its own reward to those eager students who delve into its pages. Familiarity with records of the past confers an aristocracy on the possessors of such knowledge. It may be humiliating to present what is regarded as a rare occurrence only to be reminded that several scores of years before many similar instances had been published. This is pointed out to place no damper on the reporting of independent observations as additions to the surgical literature, but only to afford encouragement toward a broader vision. Intensive perusal of contemporaneous surgical literature reveals references to older records and impels a desire for closer study.

In the glowing present surgical vision beholds the actual patient and bestows on him all the resources of head, heart and hand. What has been put in previously as preparation and training comes out, no more, no less, as the art of discrimination, the capacity to apply general knowledge to a particular situation. Here is occasion for the deepest insight, a challenge for thought, for decision, for action. The surgeon is his own supreme court, in session every day, and unless he is imbued with "the heavenly vision," a combination of tradition, courage and inspiration, he will fail in his great adventure. The readiness which says, now and here, that this or that must be done is born of a sound sanction which selects the consciously right and rejects the obviously wrong, irrespective of rule or theory, and devotes an educated judgment to the immediate problem. Mr. Kipling well said to the Royal College of Surgeons: "Your dread art demands the instant impersonal vision which in one breath, one beat of the pulse, can automatically dismiss every preconceived idea and impression, and as automatically recognize, accept and overcome whatever of new and unsuspected menace may have slid into the light beneath your steadfast hand." The deadly taint of standardization furnishes no shrine for worship in surgery. It is fatal to a liberal vision, founded on a life's labor and a single-minded adherence to truth.

When the surgeon brings his vision to bear on the future he must needs think in terms of experiment and research. No advancement in science is attainable except along the path of trial and error up to fact. Surgery dare not boast of its practical accomplishments as belonging narrowly to its own sphere, but must give credit to the auxiliary sciences the researches of which preceded and still attend its forward strides. Without Pasteur, the chemist, there could have been no Lister, the surgeon. One speaks magnificently of practical results, but behind them stands an array of theories and experiments which seemed at first of small importance, thought out by workers who had the bravery to believe in their final utility. When Faraday was asked by an inquirer observing his experiments in magnetism, "What is the use of it all?" the famous scientist replied, "Will you tell me the use of a newborn child?" There are definite problems continually arising in surgery which are to be solved by surgeons themselves, but always in the spirit of science and with

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a clear vision of reality. John Galsworthy has expressed this forcibly: "Only one who experiments out of the sheer necessities of his theme will create that which will last. They who experiment from a mere craving for novelty, capture for a season the intelligence of the weaker brother, and attract the butterflies of the day; but their works fade like dew off the grass when the sun shines."

No one could for a moment justly disparage the value of experimentation. It has led to innumerable discoveries, to the correction of serious inaccuracies, to the saving of lives. Yet certain types of research have gone up blind alleys for lack of purpose, for lack of a compelling aim, for lack of vision. There is wanted as much wisdom to see the irresistible demand for instituting a research problem as there is to conduct the experiments and interpret their findings. The fetish of statistics has done much to confuse the pictures presented in surgical research. A parade of animal experiments, a row of figures and tables, together with elaborate conclusions, may mean a great deal or nothing at all, subject to the character, the environment and the material of the individual investigator, and, further, to the proper analysis of reported statistics themselves. May not one intelligent man's conscientious opinion be of parallel value? May not vision be needed as a control factor in experiment? We hug to our bosoms the research worker in surgery who is possessed by an idea, whether it be simply a hypothesis or an actual issue, and who follows it through with unerring faith to the end, but we deprecate the trumping up of a meaningless problem only to exploit a theme which had better remain unsung, or to prove a point which needed no proof. Let us recall the earliest announcement of Hippocrates concerning surgical research: "phenomena first, then judgment, then general propositions, then practical knowledge and craft."

If, then, surgical vision derives its impulse from a conception of past, present and future, there is room for its fulfilment in surgical practice. There are three essential ingredients in the make-up of the surgeon—the mental, the moral and the mechanical. The first has to do with knowledge, the second with judgment and the third with skill. In such order they provide the why, the whether and the how of every surgical question. A well rounded surgeon recognizes this trinity of attributes and happy indeed is he—and rare in the extreme—who may possess them all in equal degree.

The mental vision that brings resource, common sense and clear thinking to bear on finding the cause, designating the disease and relieving the patient represents the surgeon's primary investment, enveloping his every thought and deed like a well fitting garment. The mind must conceive the act and mature it in the light of independent intelligence founded on valid principles. Let this be the guiding motive in the surgeon's career: to do his own thinking, his own operating and his own deciding. After all, a surgical operation is a one-man job. Team work is essential; assistants are required, but the operating surgeon in the individual case is the responsible actor; his mind carries through; other minds are merely adjuncts. Only one can do the operation; the others assist the operator and fall in with his plan. The newspapers may still report that "Doctors Brown, Jones and Robinson operated on Mrs. Smith yesterday," but we know that there was one operator, with two assistants performing their cooperative offices; otherwise, there was a syndicated enterprise with no leading spirit. The surgeon's mind must be open to suggestions, but his own ripened resourcefulness may afford him the wisest advice. When there is no surgical vision, the patients perish.

The moral attitude of the surgeon tells tremendously in his work. It supplies the qualities of judgment, accuracy and honesty. Surgical judgment has been the topic of many discourses, and different views have been held in regard to its significance. It is inherently a moral manifestation, for it has to do with a righteous intent to choose the wise course regardless of everything but the patient's well-being. Since at any moment during the consideration of a particular case the surgeon may be called on to exercise his conclusive judgment, either deliberately or instantly, and since serious consequences usually are involved in his decision, it behooves him to keep a keen edge on his surgical conscience, leaving out all matters of selfish interest or the importunities of the patient and his family. Thus is judgment displayed by the surgeon in his most exalted capacity.

Accuracy in the surgical scene stands for an ardent yearning to do the right thing in the right way at the right time. To be accurate is to care above everything for the truth in thought, action and attitude. "To think free is great; to think right is greater." Honesty of intellect is probably the profoundest type of honesty, because it is inclusive and supplies the basis for self-control, the finest of all human virtues. The surgeon who is honest with himself cannot acknowledge slipshod counsel, advise unnecessary operations or forget the person of his patient. No unworthy sentiment or mercenary desire can enter the sensorium of the honest surgeon, for he hears the Spirit of Science calling: "I am what is, what shall be, what hath been. My veil hath been disclosed by none. The fruit which I have brought forth is this: the sun is born." But greed and dishonesty will destroy every one of our visions. Our hope is to see, to know, to feel the light.

What may be called the mechanical side of surgery is not without its need of an understanding vision. Surgery is not wholly mechanical. Surely it is not all of surgery to cut, nor all of operating to perform the operation. It is true that whether a surgical procedure is topical, manipulative or operative, it necessarily requires some knowledge of mechanics; however, this may be acquired in sufficient degree by the average person in his training until the processes become automatic, allowing occasion for the development of attainments higher than the inanimate practices of the ordinary mechanic. The components of the mechanical aspect of surgery which must be mastered before skill in the art can be attained—and they are the accomplishments of every other artist—are coordination, precision and timing. Proper coordination between brain and fingers is the surgeon's peculiar endowment. The faultless response of hand and head makes for the consummation of what is called surgical technic, which is not altogether mere mechanics. Now vision plays its hand, telling what comes next, giving that sense of familiarity which breeds repose. Precision, the practice of exactness, lends to the art of surgery a feeling of security, which should anticipate the happening of the unexpected, and of deliberation, which should not be translated into delay. Being precise implies doing as much as, and no more than, indications admit and therein lies a lesson for surgeons who would win success. The special genius of timing is a gift of choice excellence, the faculty of adjusting coordination with precision so as to complete the procedure safely, speedily and successfully. In sport it means getting there just ahead of the ball or the player; in surgery it means knowing how to combine the automatic with the deliberate parts of an operation in just proportion. The talent of timing is commended to those surgeons who, on beginning an operation, seem to love it so longingly that they dislike to get through with it, but continue to pat and fondle the tissues assiduously and cease reluctantly after the period of limitation has expired, if not the patient.

Vision in surgery, therefore, is justified of its believers. Vision leads; performance follows; achievement abides. The greatest of these is vision. Its most natural and most important function would inspire a look into the future. Who knows what it holds? Certain it is that we are now in a changing age. Advancements in the science and art of surgery are the order of the day and new ideas are constantly in the making. Whether the trend will be in the direction of more operative surgery or less, no one may surely say; but there is such a thing as preventive surgery, done early or avoided entirely, and it may be that in the distant view our supreme aim will be to reduce the number of surgical operations and to raise the percentage of surgical meditations. As we go along, let us take with us surgical vision, permitting it to show the way, for

> "To keep in sight Perfection and adore
> The vision is the artist's best delight."

THE CONTROL OF PELLAGRA

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The underlying factors concerned in the prevalence of pellagra fall into two classes, which from the standpoint of public health must be viewed from different angles.

There is a small, but not an inconsiderable, number of cases which arise from conditions peculiar to the individual. Among these are dietary eccentricities and idiosyncrasies, food fads, obsessions, alcoholism, gastro-intestinal disease and other disturbances resulting in a disordered diet. These are isolated, or sporadic, cases and may occur anywhere, at any season and without reference to financial status or dietary surroundings. Conditions of this nature do not usually come within the scope of public health activities, and such cases may therefore be excluded from further consideration in this connection. Their prophylaxis and treatment are matters for the attention of the family physician.

On the other hand are the cases which arise from conditions more or less common to groups of individuals, such as households, certain institutions and sometimes the major element of the population of relatively large areas. Chief among such influences may be mentioned limitation of the kind and quantity of food crops produced, resulting in an undue restriction in variety, lack of availability of certain essential foods and foodstuffs during certain seasons, adverse economic conditions with reduced purchasing power and a general lack of thrift with its resultant impoverishment and malnutrition. These far-reaching and interlocking factors constitute the source of origin of endemic pellagra, which accounts for perhaps more than 98 per cent of all pellagra, and present a cross-section view of the conditions dominating the problem of its control.

The latest complete figures relating to the annual death toll from this disease in this country are those for 1930. During that year 7,146 deaths were recorded. The most reliable morbidity data available indicate that for each death there were not less than 35 cases and for every case a large number of patients who suffered from minor degrees of malnutrition and debility. There are few conditions more pathetic than a neglected case of pellagra, and perhaps no place in more urgent need of practicable corrective public health measures than a neglected pellagrous community. In no disease is the response to proper treatment or prophylaxis more gratifying. The lowered physical and mental standards and the reduced capacity for the enjoyment of life render its economic and social aspects of pressing importance in endemic centers. As a remediable cause of insanity it offers a most fertile field for constructive work in mental hygiene.

Of the 7,146 deaths reported, 7,000 (or 97.9 per cent) occurred in those states which lie wholly or partially within the cotton belt, and of these the vast majority occurred in that portion of the cotton belt actually engaged in the production of cotton. The next most prolific source is the smaller and more isolated rural industrial communities of the South. Pellagra never has been a problem in strictly urban centers regardless of their location or environment.

In clearing up its etiology, Goldberger and his associates, of the Public Health Service, have shown repeatedly:

1. Pellagra can be prevented at will by the simple addition of any one of several known articles of food to the dietary on which it developed.
2. It can be produced at will in persons never before involved by the removal of these items from the habitual diet, even though their chemical and energy values are fully compensated.
3. There is a specific water-soluble and heat-stable accessory food factor of the class known as vitamins concerned in its production, this factor being sufficiently abundant in those diets which prevent pellagra and low or lacking in those which fail to prevent it.

These are cold, hard facts based on a wide assortment of direct experimental evidence which may be regarded as a standard of quality in scientific medicine. The conclusion that the disease is due to a specific dietary fault is therefore not only unavoidable but inevitable, and any control measures which are not planted squarely on this conception of its origin can never hope to succeed.

Summarizing the foregoing, it is seen that pellagra is one of the leading causes of death and disability throughout much of the rural South, that it may be uniformly prevented by the use of any one of several supplemental foods and that the basic dietary conditions most favorable for its development are those which prevail in those sections in which cotton production is the principal agricultural pursuit.

Knowing the nature, source and means of prevention of this veritable public health scourge, the question of why more progress is not being made in its permanent control might fairly be asked. It is no difficult

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matter to map out a program designed to wipe out pellagra from any given section within a very short time, but devising a suitable program for its eradication and effectively carrying it out under the conditions prevailing are two entirely different propositions. No problem so intimately bound up with economic conditions, agricultural practices and dietary customs, which themselves are hard to alter, can by any means be classed as a simple and easy undertaking. It may sound simple enough, but it has obstacles which are not encountered in the usual preventable diseases. Not the least of these is that whatever permanent success is attained, the people involved must, themselves, ultimately play the essential rôle.

Under institutional conditions, where the diet is under centralized control, the problem of pellagra can be eliminated promptly. This was amply demonstrated by Goldberger and his co-workers in connection with the establishment of its etiology. Utilizing this knowledge, our insane asylums, homes for the indigent and orphanages, in which pellagra was formerly a most serious problem, have been able to control it in a satisfactory manner. By a few simple and comparatively inexpensive additions to the daily menu, one state institution for the insane, the largest in the South and the second largest in the country, has reduced the annual death rate from pellagra from 6.2 per cent of all inmates to as low as 0.1 per cent, this in spite of the fact that during the same time deaths from this cause for the state at large increased almost 100 per cent. Were it not for the irreducible minimum created by the constant admission of many almost hopeless cases of pellagrous insanity, there could now be little excuse for any considerable number of deaths from pellagra in this or any similar institution. Except under extremely reduced resources, its conspicuous presence in any community in which the diet is subject to regulation by central authority can no longer be justified.

There has been a rather sharp increase in the prevalence of pellagra during the past two years, but the increase in morbidity has been greater than that of mortality. A more general understanding of the proper treatment has made it possible to save an increasing number of patients who, under the old hit-or-miss methods, would have died. But this increased morbidity tells us in no uncertain terms that practical knowledge or means of its prevention have not been sufficiently diffused to enable the small cotton farmer or rural industrial worker to weather safely the dietary hazards occasioned by the recent shift in economic conditions.

Since it is people of restricted means who suffer most from pellagra—a situation which is aggravated by periods of economic depression—it has been said that to do away with this disease it will be necessary to reduce materially residual poverty and eliminate depressions. Both would, no doubt, be highly desirable, but fortunately neither is essential. There are numbers of nonpellagrous families in the pellagrous sections which, compared by the usual standards, are as poor as some of those who have pellagra or even poorer. Many of the inhabitants of the nearby southern Appalachian and Ozark sections, though in most respects notoriously poor, are seldom troubled with pellagra. It all depends on the source and nature of the food supplies and the ready availability of an adequate poverty-resistant and depression-proof diet.

The food situation in the rural sections of the cotton belt has become very sensitive to the price of cotton. The farms have gradually become less self-sustaining in the matter of both foodstuffs and forage as the production of cotton has become more intensified. The smaller, or tenant, cotton farmer has got into a rut from which he cannot easily extricate himself. Many have long since reached the point where they must depend wholly on outside assistance in making their crops, and the kind of crops produced is largely determined by those who extend the necessary aid. We must respect the right and propriety of the banker or merchant who furnishes the cash or supplies to designate, in the absence of other security, the kind of crops that shall be grown. A creditor cannot be expected to assume, to any considerable degree, the hazards incident to the production and marketing of major crops, other than cotton, under the conditions prevailing in this section. There are, however, in many localities public spirited bankers and country merchants who aid greatly in the various movements for better living by making the planting of a certain acreage in food and forage for home use a condition of every crop loan. Movements of this nature make most progress when the price of cotton is low.

However paradoxical it may seem, the slump in the price of cotton which operates to bring about an increase in the prevalence of pellagra will, if continued long enough, give rise to factors of a decidedly corrective nature. The more unprofitable cotton becomes and the longer it continues to be so, the greater will be the variety and abundance of food and forage crops grown in its stead, and the broader will be the basis for a more diversified diet. This very reaction was in evidence in many cotton-producing sections last year and has since become more pronounced and more general. This means a reduction of pellagra incidence in these areas, regardless of the severity and duration of the present depression. A similar favorable influence on the incidence of pellagra has long since been observed in those sections in which the devastating effects of the boll weevil have been such as to render the production of cotton uncertain and unprofitable.

It is not meant to imply that to control pellagra we must stop growing cotton. Cotton is the logical main crop in those portions of the South suited to its culture, and in all probability it will continue to be the backbone of Southern agriculture. But until the cotton grower has a wider and more dependable source of sustenance for himself and family than the few simple, nonperishable staples secured through the country store or commissary, pellagra will continue to exact its annual toll.

This brings us to the question of what there is to be done about it, and how it may be accomplished. To be permanently effective, corrective measures must be such as will offset the subtle influences which have progressively undermined the dietary stability of this section for a half century or more. In other words, endemic pellagra is largely a by-product of the more modern one-crop system of agriculture as practiced in the South. Its elimination will follow the adoption of a more diversified diet available at all seasons. This, in turn, must rest on either home production of a wider assortment of foods or a constant purchasing power covering a wider range. Nothing short of this can bring about a satisfactory solution of the problem.

Diversification of crops to a degree that will insure a more constant and adequate variety of home grown foodstuffs and sufficient forage and feed crops to maintain livestock and poultry for food purposes would seem to be the logical solution. From the point of view of both economics and health this has everything in its favor; yet the prospects of bringing about permanent diversification to this degree are anything but encouraging. Such a policy has long had the untiring support of the United States Department of Agriculture and the state agricultural colleges with their various extension services, and the loyal backing of the agricultural and lay press. Still, but little permanent headway appears to have been made. The going is comparatively easy so long as cotton is unprofitable, but the gains usually melt away as the price again advances.

It is the sudden and unanticipated shift from the higher to the lower economic level that pinches the diet most, and this period of readjustment to the more meager returns is almost invariably accompanied by a fresh supply of pellagra. If the price of medium staple cotton should become stabilized either at below 5 cents or above 15 cents per pound, the pellagra situation would largely take care of itself. At the lower level, the cotton farmer would soon be growing sufficient food for his requirements, while the higher price would enable him to procure a larger assortment of foods from outside sources.

Such broad movements as general diversification or price stabilization, or both, may eventually relieve the situation, but the possibility seems so remote that substitute or supplemental measures are urgently indicated. Specific and practicable knowledge aimed at the very root of this problem must be brought into play if a satisfactory measure of success is to be attained.

Pellagra is the first, and so far as we know the only, deficiency disease of urgent public health magnitude with which we have to contend in this country. It is brought about in an extraordinary manner in that it is produced by the *absence* of something. Measures somewhat foreign to the usual functions of a public health organization will therefore have to be employed in its control. We public health men have become an aggregation of seasoned germ fighters organized to function against positive disease-producing factors, and our machinery has not been fully geared to meet this new public health demand. Our ideas of preventive medicine have long been the destruction or elimination of vectors of disease, or the heading off of their effects by the employment of serums or vaccines. In dealing with a dietary deficiency disease, a program somewhat reversed and having as its object the restoration of a missing essential must become a more conspicuous feature of our armamentarium.

The extent and importance of this problem are clear. The factors concerned in its production are well known. The avenue of approach is wide open. We need not await the solution of the chemical problem as to the exact nature of the mechanism by which the absence of this specific food factor produces pellagra or its presence prevents it. In all probability, we shall eventually know more about the ultimate action of all the vitamins, but the chances are that this additional knowledge will add little to the means and methods for its prevention now at our disposal.

In approaching the problem of pellagra control, we will do well to bear in mind certain outstanding epidemiologic observations: Approximately 90 per cent of all cases of endemic pellagra have their onset during the period from April to July. Human experiments, as well as numerous observations in the field, have shown that it usually takes from three to five months for pellagra to develop after the diet has become sufficiently restricted. This means that it is during the late winter and early spring months that the foundation for the season's crop of pellagra is laid, and that it is toward the correction of this seasonal fault that the first remedial measures should be directed.

The most promising procedure would be the endeavor to bridge this gap by direct aid in coordinating and furthering the activities of existing agencies such as the agricultural, nutrition and home economics extension services and the various live-at-home and other movements having as their object the improvement of economic and dietetic conditions in the rural sections of the cotton belt. The aim should always be to assist these people to solve this problem by their own industry and resources. Progress will be slow, but whatever is accomplished will be permanent. Subsidies in food production and distribution will produce results, but this can be neither accomplished nor perpetuated without outside financial assistance.

The Public Health Service has for some time been engaged in the study of the relative pellagra-preventive value of the more common staple foods and foodstuffs. Early in this study, fresh lean meats and milk were found to be dependable pellagra preventives, but they are not within reach of the average pellagrous household. Here and there a family may be induced to establish a dependable source of one or both of these, but on the whole little progress may be expected if sole dependence is placed on their introduction in adequate amounts. With this limitation in mind, attention has more recently been centered on those foods or foodstuffs which may be most easily and cheaply produced at home or otherwise made available at the season when pellagra-preventive foods are normally scarcest. Other things being equal, those which require the least effort to produce or prepare for the table and will best fit into the established system of agriculture and the domestic habits and customs of these people will prove most practicable.

So far, thirty-five foodstuffs have been tested. Of these milk (including buttermilk and canned evaporated and dried milk), fresh beef, canned corned beef, liver, canned salmon, canned haddock, tomatoes, turnip greens and canned English peas have each been found to prevent pellagra when added in sufficient quantity to an otherwise pellagra-producing diet. Dried beans and peas, eggs, canned spinach, green cabbage and canned string beans, though less effective, are valuable contributory sources of the pellagra-preventive factor. Cornmeal, wheat flour, rye flour, oatmeal, molasses, cane syrup, sweet potatoes, mature onions, carrots, rutabagas, salt pork, lard, cottonseed oil, butter and gelatin have little or no pellagra-preventive value, regardless of the quantity used. Dried yeast and commercial wheat germ, although not commonly looked on as human foods, are good sources of the pellagra-preventive vitamin and are valuable supplements, especially as temporary expedients under emergency conditions. A study of collard, kale and mustard greens is now in progress, with indications that the collard greens, at least, will prove to be of value.

One does not have to look far to see that during the early portion of each year the diet of many people of the pellagrous sections is limited almost exclusively to the class of foods which have been found to be nonpreventive. Although poor protection against pellagra, foods of this nature are nevertheless essential. They serve as the basis for sound nutrition and, when properly supplemented, constitute a satisfactory ration. Their use should not be discouraged. The goal to be sought is amply exemplified in every pellagrous community. In looking for cases of pellagra, the home surrounded by evidence of a good garden, or a cow or two, a few pigs and some poultry may as well be passed up, for the chances are less than one in a thousand that pellagra will be found. On the other hand, the home surrounded only by last year's cotton patch will always bear watching.

MUCIN THERAPY FOR PEPTIC ULCER

PRELIMINARY REPORT OF OBJECTIVE RESULTS ON PATIENTS WITH INTRACTABLE ULCER

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Fogelson[1] reported successful results in the treatment of peptic ulcer with gastric mucin. Kim and Ivy,[2] and Fauley[3] performed experiments on animals and reported that mucin prevented ulcer formation in dogs with biliary fistulas. Alkalis were found by Kim and Ivy[4] to prevent ulcer formation, but the animals did not do well in general.

The results of these workers seemed to justify an independent clinical study. Atkinson[5] reported that mucin therapy was successful in ulcer-bearing individuals.

In the past it has been impracticable to estimate the value of ulcer management because of the difficulty of proper control and the use of subjective evidence.

Cases of peptic ulcer present such diverse clinical courses that most of them cannot be used for the purpose of passing judgment in regard to the value of a certain management. Previous experience at St. Luke's Hospital clinic showed that many ulcer patients recovered without any form of management, while others improved with a favorable change in environment, a few dietary suggestions, powders, belladonna, bromides or phenobarbital. A small percentage persisted in having difficulty on strict managements.

METHOD OF EXPERIMENT

As a control procedure, patients were chosen for mucin therapy who had experienced many recurrences and who had failed to improve on hourly feedings and hourly powders. An additional control series of "difficult" patients was continued on feedings and powders.

Subjective evidence has been overemphasized in estimating the healing of peptic ulcer. Frequently we have seen ulcer defects grow deeper or additional ones appear on various managements considered adequate, when the patient was subjectively improving and even entirely free of distress. Conversely, in other patients, the defects in topography diminished or disappeared and the subjective symptoms became more severe. The degree of distress, its location and behavior varies greatly in different patients, even in the same patient at different times if he is observed critically. Some of our most difficult ulcer patients had a minimum of distress, especially those prone to ooze a good deal of blood into the stomach. Subjectively these were easily palliated. Some of the patients objectively controlled with little difficulty had the most persistent subjective complaints. We believe, however, that we have not included the psychalgias in the present series because of the strict diagnostic requirements. Further knowledge of the rôle of the vegetative nervous system may explain these observations and perhaps at some future time an investigator or clinician may be able to rely on subjective evidence in peptic ulcer. For these reasons, objective data were obtained in the patients studied. The objective criteria to which we refer are the presence of blood in the stomach and stools, hyperacidity, and definite roentgenographic observations.

A definite diagnosis was thought essential in this study although, in general, relatively few ulcer patients can qualify in all respects. The following conditions were required for every patient: an unimpeachable ulcer history; occult or gross blood in the stomach and stools; hyperacidity; relief of distress with mucin, powders, neutralizing food or aspiration, and definite roentgenographic evidence.

One hundred and sixteen ulcer patients have been treated with gastric mucin; the present report includes thirty-seven cases. The smaller number was chosen because they had been intractable over a long period on strict management. The remainder either had not been observed for a sufficient length of time or failed to report regularly for their weekly tests.

Twenty-one patients were studied in the hospital. Many of these patients had been under our care on various ulcer managements for years. The average time spent by each patient was 35 days; a total of 735 hospital days. The hospital period was made as long as was financially possible to obtain objective evidence and exercise clinical control. Before entrance, roentgen studies, gastric analyses and stool examinations were made and the patient placed on hourly "neutralizing" feedings for an average of ten days. Motor meals were given when indicated. No mucin was administered until sufficient control determinations had been made and clinical behavior noted. Each patient, except those having gross hemorrhages or showing signs of perforation, underwent the following routine: a weekly forty-five minute Ewald test meal; a weekly two hour fractional meal, followed by from two to six hour periods of from fifteen to thirty minute aspirations to study secretagogue characteristics of various mucins and alkalis. Aspirations were done twice weekly before breakfast and twice weekly at 11 p. m. Weekly blood counts were taken. All stools were analyzed. The patients were studied with roentgen rays at periods of from two to four weeks. When showing occult blood in the stomach contents or stools the patients were kept in bed, but they were allowed to be up and about after none was found. On dismissal from the hospital they followed the outpatient routine.

Read before the Chicago Medical Society, March 16, 1932.

From the Department of Medicine, Northwestern University Medical School and St. Luke's Hospital.

[1] Fogelson, S. J.: Treatment of Peptic Ulcer with Gastric Mucin, J. A. M. A. **96:** *673 (Feb. 28) 1931.*

[2] Kim, M. S., and Ivy, A. C.: The Prevention of Experimental Duodenal Ulcer by Feeding Neutral Gastric Mucin, J. A. M. A. **97:** 1511-1513 (Nov. 21) 1931.

[3] Ivy, A. C., and Fauley, G. B.: Factors Concerned in Determining the Chronicity of Ulcers in the Stomach and Upper Intestine, Tr. Am. Gastro-Enterol. A. **33:** *81-93, 1930.*

[4] Kim, M. S., and Ivy, A. C.: Comparative Value of "Gastric Mucin" and "Alkalis" in Prevention of "Peptic" Ulcer in Biliary Fistula Dogs, Proc. Soc. Exper. *Biol.* & Med. **29:** *686 (March) 1932.*

[5] Atkinson, A. J.: Gastric Mucin in the Treatment of Peptic Ulcer, J. A. M. A. **98:** 1153-1156 (April 2) 1932.

Sixteen of the thirty-seven patients were diagnosed, observed and treated exclusively as outpatients. The patient was questioned and examined every week. All, including the twenty-one former hospital patients, had Ewald test meals and stool examinations at each visit. Blood counts, fractional test meals, motor meals and roentgen examinations were continued in the combined group when indicated.

The average observation period in this group thus far has been slightly less than one year.

The average duration of ulcer symptoms for the group of thirty-seven was seven years and nine months per patient. There was an average of sixteen recurrences per person. Previous hospitalization totaled 2,171 days, giving an average of 58 days per patient.

When mucin was begun, strict ulcer management had been given to each patient for an average time of three years and six months.

The age average of the group was 31 years and 6 months.

Thirty-one were men, six were women. Thirty-three had duodenal ulcers, two jejunal ulcers, one a gastric ulcer, and one had both duodenal and gastric ulcers. Of these ulcers, fourteen were of the penetrating type. Three patients had massive hemorrhages when they came under our care, and eight had histories of repeated hemorrhages. Five had histories of perforation.

The majority of the patients used manifested no other disease conditions which in any way related to the ulcer. The Wassermann test was taken on each person in this series.

RESULTS

The positive benzidine reactions in the stomach contents disappeared on an average in nine days, the longest time being twenty-six days. In the control series on hourly feedings and alkalis, the benzidine reaction became negative on an average in twenty-four days. Several in the control series were not included in this average, because they never became negative on the usual management prior to the administration of mucin.

The positive benzidine tests in the stools became negative on an average of 11.5 days after starting mucin. The control series became occult blood free in 27.2 days.

The average gain of weight of the mucin treated patients was 13½ pounds (6 Kg.); the average for the control series was 9 pounds (4 Kg.).

As the mucin treatment progressed, a study of gastric acidity showed that in a majority of patients the readings in the free hydrochloric acid decreased as judged by the weekly Ewald test meals. Some remained stationary, and a few went up during the first twelve weeks of the treatment. In the latter group, double doses of mucin were used for intervals of from three to five weeks. This lowered the free acidity determinations on an average of from 15 to 20 units, but when the ordinary doses were resumed the acidities again increased to the progressively diminishing original levels. The control series on powders and feedings also maintained a high acidity; a few diminished slightly, but the majority remained at the original level or went higher as the treatment progressed.

No management thus far used in our clinic has succeeded in transforming hyperacidity to a so-called normal acidity without the "healing" of the ulcer or the relief of the retention. As the ulcer "heals," the hyperacidity usually decreases unless alkalis are used. In a minority of ulcer patients, managed with alkalis, the free acidity diminished; but in the majority, the acidity increases during the ulcer healing process. Whether or not the ulcer heals, the chronic ulcer patient tends to maintain a hyperacidity. Mucin therapy has lowered the acid levels of healing ulcers in intractable patients more effectively than any method we have previously employed. It is to be kept in mind that these statements are based on data obtained by morning test meal aspirations rather than 11 p. m. aspirations.

The hypersecretion accompanying peptic ulcer was moderated more with mucin therapy than with the same management with alkalis. Alkalis seemed to diminish a hyperacidity and hypersecretion for several weeks and apparently overcame this troublesome complication entirely in easily controlled ulcer patients. In the intractable patients, the hypersecretion increased after several weeks for some unknown reason. This was more marked with alkalis than with mucin.

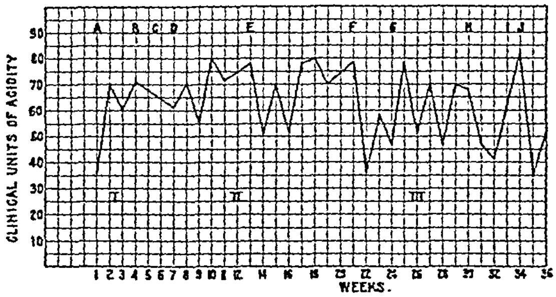

Chart 1.—Gastric free acidity levels; results of weekly Ewald test meals. The behavior of the gastric free acidity is shown in a typical intractable "peptic ulcer." The patient was a Negro porter, aged 44, who had had a recurring duodenal ulcer for eleven years. The previous hospitalization for ulcer management was 112 days. Since the ulcer was first diagnosed, he had received frequent feedings and alkaline powders. He began treatment in our clinic in 1928. At this time, roentgen studies showed a definitely deformed duodenal bulb with a residue at the end of five hours. Hourly feedings and powders were used until 1931. The distress, in spite of the strict management, had become progressively more severe and attacks more frequent. He had had night distress for five years. Vomiting had been his only means of complete relief. There was a total disability for eight months before mucin was begun. He became free from distress on the first week of mucin therapy. The stomach contents and stools, which had remained strongly benzidine positive with the alkaline management, became negative after one week of mucin and have remained so. He returned to work two months after starting mucin. There has been no recurrence since the mucin treatment was started.

A, hourly feedings and hourly powders were started as the patient entered the hospital. *B*, the patient had very little relief from distress but was released from the hospital. *C*, the patient stated that he was so weak and distressed that he was unable to come to the clinic for three weeks. During this time he took hourly feedings but no powders. *D*, hourly feedings and powders were resumed with unsatisfactory subjective relief. *E*, alkaline powders were stopped. A tablespoonful of mucin was given every two hours; the hourly feedings continued. *F*, the dosage of mucin was doubled to see whether hyperacidity would diminish. *G*, the ordinary dose of mucin was resumed. *H*, mucin again was doubled. *I*, the patient ate sardines and had nausea, vomiting, diarrhea, and generalized abdominal distress. He did not come to the clinic and went without mucin for one week. *J*, a double dose of mucin was resumed. The roman numerals refer to the roentgen observations made by E. L. Jenkinson. I, duodenal bulb deformed on both curvatures; one fifth of the barium remained at the end of five hours. II, duodenal bulb was deformed and fixed, having a clover leaf deformity; there was still a small residue at the end of five hours. III, duodenal bulb showed definite improvement since the former examination, as there was less deformity. There was still a residue at the end of five hours.

Hourly feedings, without the hourly alkaline powders, when used on easily controlled ulcers, had approximately the same effect as mucin therapy in diminishing a hypersecretion or hyperacidity.

When an ordinary dose of mucin, which is a rounded tablespoonful (15 Gm.), was placed in the stomach at the end of a two hour fractional test meal there was usually a slight increase in free acidity. This was sometimes just under or just over the maximum reached at the peak of the test meal and usually diminished after from thirty to sixty minutes and was followed by a gradual fall, which was maintained until the end of the test, from four to seven hours later. The secretion rate, with and without mucin, was checked in fifteen all-day experiments of this type. The average did not exceed that obtained on a similar series of ulcer patients aspirated at from fifteen to thirty minute intervals, who had received either no mucin or some combination of alkali. Therefore, no marked secretogogue effect was obtained from the mucin preparation we used. However, Rivers,[6] has obtained from some mucin a decided secretogogue action, which we are informed is now being controlled by both chemical and biologic assay.

Roentgenograms were made and fluoroscopy was performed on all patients at intervals of from two to four weeks. A progressive improvement resulted in a majority of the patients. The hourly feeding series and the hourly feeding and hourly alkaline powder series also showed improvement. In the thirty-seven intractable ulcer patients, in whom further improvement on strict ulcer management was not noticeable, it was possible to influence the roentgen manifestations in a majority of instances in a favorable manner by the use of mucin. A decrease was evident in the deformity of the topography of the bulb or stomach when studied at a time of maximum activity and maximum filling. Several patients improved roentgenographically up to a certain point but failed to improve further, owing perhaps to the existence of scar tissue. Most of the patients with a penetrating type of peptic ulcer showed a progressively diminishing defect which accompanied the disappearance of blood from the stomach and stools, and the decrease of acidity and subjective relief. This leads us to believe that these ulcer craters "healed" with mucin therapy when they had failed to heal with similar diet and alkalis.

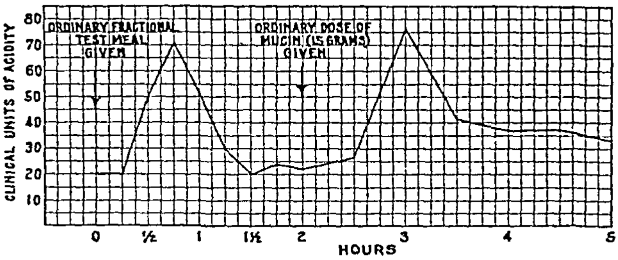

Chart 2.—A comparison of the acid stimulating property of mucin with that of a bland gruel. This patient is being treated for a duodenal ulcer of penetrating type.

In the thirty-six out of thirty-seven intractable ulcer patients, mucin gave subjective relief of distress in an average of eight days per patient.

There was one failure in the series. The diagnosis was a penetrating type of duodenal ulcer and multiple diverticulitis. The patient was not benefited by hourly feedings and alkalis and received no relief or objective improvement from mucin. Each was tried for four weeks. Morphine in large doses was palliative only. It was felt that surgical aid was indicated. When the abdomen was opened, a large red granulomatous mass, in the region of the first part of the duodenum, was found. This apparently surrounded a penetrating ulcer. The patient obtained partial relief from a posterior gastro-enterostomy, followed by milk and cream and alkalis. Six weeks later mucin was started again, with complete relief on the first day. Normal acidity and benzidine negative stools soon followed. We assume that perhaps it took that long for the granuloma to subside and the enterostomy to function smoothly.

SUMMARY AND CONCLUSIONS

1. Thirty-six out of thirty-seven patients who had partial to complete disability on previous strict ulcer management have been relieved objectively and subjectively by mucin.

2. Roentgen deformities in topography were influenced more by administration of mucin than by former management.

3. Emptying time or retention was diminished on mucin treatment. We do not consider that we have sufficient evidence to make a comparative statement at this time.

4. Disappearance of gross and occult blood in stomach and stools was more rapid with mucin treatment than with conventional management.

5. Mucin treatment was effective in controlling several massive hemorrhages from the stomach. Other methods were also effective.

6. There have been no recurrences in thirty-six patients who had frequent previous recurrences.

7. Hyperacidity, as measured by weekly Ewald test meals, was not lowered on the treatment of hourly feedings and powders and was only somewhat lowered by mucin treatment. All the patients were taken off powders or mucin and food twelve hours previous to the test meal.

8. Mucin in ordinary doses did not lower gastric acidity appreciably when placed in the stomach after a two hour fractional meal followed by aspirations at frequent intervals for from four to seven hours. In the mucin we used we did not observe any secretogogue action which interfered with the beneficial effect. From our objective observations, the therapeutic effect is due to some factor other than neutralization of acid. The quality of commercial mucin has been improving, as the result of the cooperation of the makers with Drs. Ivy and Fogelson. A histamine-like substance is no doubt present in varying quantities, as it is present in other tissue extracts, such as liver extract. This is now controlled by chemical and biologic assay. We have seen no toxemias. There has been a notable increase in the feeling of well being and an improvement in the appearance and behavior of the mucin-treated patients.

9. Mucin has a beneficial effect on the bowel.

10. There was one failure; at operation a red granulomatous tumor mass was found having formed about an ulcer of penetrating type. Gastro-enterostomy was done. Distress persisted with alkalis for six weeks and then subsided with mucin; this may have been due, of course, to functional improvement of enterostomy at this time.

11. We have found in the past that a majority of peptic ulcers heal with no treatment or any treatment. The minority are sometimes very resistant to the best forms of management. Mucin has helped these intractable cases. We realize that any local palliative treatment does not in itself change the constitution or the vegetative nervous system of the patient who is an ulcer-bearing individual. We shall persist in this comparative investigation of methods in the hope that further physiologic studies will disclose more clearly the etiology and treatment of ulcer.

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[6] Rivers, A. B.; Vanzant, F. R., and Essex, H. E.: The Dangers of Using Impure Mucin in the Treatment of Peptic Ulcer, J. A. M. A. **98**: 1156 (April 2) 1932.

1/13 C-40

INEXPERT REFRACTION

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The eye is defined very simply as "the organ of vision" (Century Dictionary, p. 2103). A number of secondary definitions are given, merely amplifying or extending the first.

Is it presumptuous to begin a paper to be presented before the most representative group of American ophthalmologists with a statement so axiomatic? If so, we crave forgiveness. Recalling our undergraduate years and those immediately following, when we were first putting to practical use the concepts of medicine and surgery acquired in the laboratories and clinics, that which preeminently claimed our interest and attention was the means of restoring the sick patient to health. We were aware that a malady might, through the creation of toxic products, seriously interfere with the normal activities of certain organs, e. g., the impaired function of the kidney in scarlet fever or the development of myocardial changes in the course of diphtheria. Therapeutic indications were clear; to rid the body of toxins as speedily as possible and to lighten the load on impaired organs. The restoration of function was incidental to the procedures employed to restore the patient to health. Sometimes the cure demanded the destruction or removal of organs, e. g., the abscessed tooth, the tuberculous kidney, the hypertrophied prostate, etc.

Impairment of the function of a bodily organ is due to (*a*) toxins incident to some general malady, (*b*) toxins generated by infection in some distant organ or (*c*) disease or growths originating in the organ itself.

Impairment of the function of the organs of special sense may be wholly independent of local or general disease. The senses of smell and taste are subject to fairly wide variations, and may be made more acute by training, as in the case of wine and tea tasters. Hearing may be impaired by occlusion of the external auditory canal with wax. The sense of touch may be diminished by cold or conversely increased by moderate heat. The delicate and accurate tactile sense of the blind has been developed by constant manipulation of objects to determine their nature in the absence of visual perception, and the necessity of learning to read the raised types.

Above all, the sense of sight is capable of improvement by the simple expedient of placing a lens before the eye. It is not at all necessary that both the elements, axial ametropia and astigmatism, which are inherent in most eyes, be considered in the composition of a lens that is intended merely to improve vision; for this purpose usually a simple plus or minus sphere will suffice. Some are content with this improvement, and not requiring high visual acuity, having no symptoms of eyestrain and not possessing delicately poised nervous systems, do not suffer the miseries of asthenopia. For others—and their name is legion—the most exactly estimated compound lens, with both spherical and cylindric elements determined to the eighth of a diopter and the axis of the cylinder exactly placed, is a necessity if the eye is to see most acutely and function most comfortably.

The young student of ophthalmology will make an auspicious beginning if, either through correct teaching or the exercise of his native intelligence, he has indelibly impressed on his mind the fact that the eye is "the organ of vision," and that the work to which he is about to dedicate his life has three simple (but tremendously important) objects, namely, the preservation and increase of vision, the comfortable functioning of the eyes and the prevention of blindness.

The majority of all patients who consult the ophthalmologist have, primarily at least, errors in refraction. Certain external disorders, e. g., blepharitis, conjunctival hyperemia and hordeolum are frequently dependent on uncorrected ametropia. Congestion of the choroid (the "fluffy choroid" of Risley) and the veiling of the papillary margins in hyperopia or hyperopic astigmatism are not, in our opinion, imaginary concepts. Who has not seen the disappearance of such signs after the wearing of an exact correction? If further proof were needed of improvement in the intraocular circulation, hence of the nutrition of the retina, one has only to recall the often striking increase in visual acuity following the constant wearing of appropriate spectacles.

One should not fall into the error of regretting the appearance in one's office of "just another refraction case." It is our conviction that such an attitude of reluctant tolerance is at the bottom of much of the mediocre work that is, even today, being done in this all important branch. Rightly viewed, the patient with ametropia and all the symptoms incident thereto presents to the ophthalmologist a challenge which is to be met enthusiastically with all the care, time and painstaking effort that would, without second thought, be bestowed on the patient who is a candidate for an operation for cataract.

It has been our practice for many years to secure from the patient a complete history of his previous contacts with opticians, optometrists and ophthalmologists, and we take pains to dispel the confusion that usually exists as to which type of examiner he has consulted. Careful inquiry is made as to the use of "drops"; the duration of the symptoms of cycloplegia giving a hint as to whether homatropine, scopolamine or atropine has been used; the time that has elapsed between the cycloplegic and postcycloplegic tests; the number of postcycloplegic tests (if more than one); the method of securing glasses; whether or not an examination has been made of the finished product; whether there has been insistence on a spectacle mounting, rather than an eyeglass; whether specific instructions have been given as to the period of wearing the glasses—constant, inconstant or for near vision only, or whether a return visit at the end of a fixed period was suggested.

We endeavor, also, to secure some notion as to whether any tests of the ocular muscles have been made, but we must confess that, in most cases, the patient's recollection of the details of such tests (even when the subject is introduced by leading questions) is too hazy to serve as reliable evidence.

We have discussed with many colleagues their attitude toward eye testing. Is the task enjoyable or irksome? We have observed, so far as possible, the methods employed by other men; we have tried to determine whether the older men have modified their methods of objective and subjective examination in the light of recent advances in technic; we have scrutinized our own methods and from time to time have made

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modifications, some of which have served as checks on prior methods and have been retained.

As a result of these inquiries and observations, we have reached certain conclusions which seem to offer an explanation for some of the inexpert refraction that, from time to time, comes to the attention of every ophthalmologist.

REASONS FOR INEXPERT REFRACTION

1. There is the ophthalmologist who is "not interested in refraction." Is not this almost tantamount to a declaration that he is "not interested in ophthalmology"? If ophthalmology has any attraction for him, it lies in diagnosis, therapeutics and operations. Closer inquiry will usually reveal the fact that he has received just enough insight into ophthalmology to realize that refraction tests require precious time that might be more lucratively employed. It is our positive conviction that this type of practitioner is far less frequent now than he was twenty years ago, and it is to be hoped that he will eventually become as extinct as the "dodo."

2. Some ophthalmologists have so many "irons in the fire" that they have "no time for refraction." The demands of teaching, the pursuit of original research, the writing of papers, the attendance at engagements outside of professional life and the exigencies of private and consultative practice (which may include otorhinolaryngology) render it physically impossible to "do refraction" (there simply are not enough hours in the day). Therefore this part of the practice is delegated to a medical assistant. This may be unfortunate for the latter, who is notoriously apt to fall into the ways and adopt the ophthalmologic habits and concepts of his chief. In such circumstances it is not surprising that the young man soon comes to regard his job as irksome and hopes for an early release from its drudgery. We wish, however, to state that we know of many offices in which this arrangement works well, but only because the chief is interested and is an expert in refraction and insists, at least in the beginning, in supervising the work of the assistant, and later when the latter becomes more expert is ever willing to offer counsel and advice.

In lieu of a medical assistant, an ophthalmic technician—usually a recent graduate from a woman's college—can be trained to serve a very useful purpose in the preliminary tests; but there should, invariably, be a check-up and revision by the ophthalmologist, as the patient should have the benefit of his mature judgment in writing the prescription, and his opinion is necessary to determine the presence or absence of extra-ocular or intra-ocular disease.

3. The attitude that "the game is not worth the candle" is held by some ophthalmologists. We are quite sure that there are some colleagues who view with a smile of amused tolerance what they regard as excessive concern for the refinements and niceties of eye testing. They point out that the enthusiast's most meticulous efforts may be quickly nullified by the bent frame, or the round lenses turned to an axis not intended. They recite with glee the easy tolerance of some eyes "fitted?" with lenses unsuited either in spherical or cylindric component. But they seem to forget that for one pair of eyes so tolerant there are dozens that would be tortured by such maladjustment. Much depends on who is the owner of the astigmatic off-axis eyes.

4. Some men practicing in smaller communities have stated to us *that they feel themselves in direct competition with optometrists.* To maintain their standing with patients they think they are compelled to "speed up" the work of refraction, to adopt short cuts, to get the patient through in a day, etc., in a word, to lower the quality of the work to optometric levels. Such a practice seems to us sheer folly, and its continuance constitutes a betrayal of professional integrity. By method and practice the ophthalmologist should secure the most accurate measurement, and it is a matter of no moment whether his result is attained in one day or ten. If the ophthalmologist is going to fall to optometric levels, he is doing far more than optometric propaganda could ever do to perpetuate in the public mind the utter confusion that now prevails.

5. Much inexact refraction emanates from eye clinics. Many of the clinics are undermanned, and the number of patients demanding refraction exceeds the number that can be tested accurately, so the policy of "roughing it out and letting it go at that" prevails. *Happily, this criticism does not hold for some clinics in* which the technical equipment is of the best and one or more men, skilled in refraction, are paid for doing expert work.

The beginner in ophthalmology should adhere strictly to the teachings and practices of the art and science of refraction laid down by our ophthalmologic masters. Such a course may not in the beginning bring to him a large clientele, but in the long run he will secure the confidence of the public, or at least, that part of the public that is sufficiently discriminating. In the meantime, he will have the consciousness of having done his work with precision and thus upheld the highest ideals of professional practice.

VARIATIONS IN REFRACTION

It is well always to be on guard against misjudging the work of a colleague who may have preceded one by several years in testing the eyes of the new patient. His correction, as determined by neutralization or by one of the lens-measuring devices, may seem surprisingly at variance with the determination of the present refraction, and one may be tempted to disparage his skill. An ophthalmologist who has been long in practice will have had many experiences of the changes in the refraction of the human eye retested several times over a period of years; at times the change may be so striking that he may have misgivings as to the accuracy of his own prior tests. Experiences of this sort breed humility and suggest extreme caution in condemning the correction of a predecessor known to be a careful and painstaking examiner. We know that some of our patients, for whom we have spared neither time nor pains in deciding on the most adequate correction, have deserted us for colleagues who, on subsequent retesting some years later, have been astonished at what appeared to be the inexactness of our estimation. An increase or decrease in hyperopia, an increase or slight decrease in myopia, a variation in the degree of astigmatism and a shifting of the axis are common changes which may and often do occur in the space of a few years. Such changes are well known to patients who come at stated intervals to be "checked up" even in the absence of symptoms. Others wait until symptoms obtrude unpleasantly to remind them that "it is time to have my glasses changed."

When all due allowance has been made for variations in refraction which normally occur with the lapse of years, there remains a large group in which by no stretch of the imagination can one bring oneself to believe that the prior estimate was correct or even approximately so. We have seen—doubtless an experience shared with many members of this Section—persons with hyperopia supplied with minus spheres, those with hyperopic astigmatism given minus cylinders, those with mixed astigmatism treated as if they had the myopic variety. A common error is the prescribing of spheres for patients with compound hyperopic astigmatism.

In the management of presbyopia there is much unwisdom manifest. Failure to take into consideration the reading habits of the patient, the distance at which he prefers to hold his book, accounts for improper presbyopic additions. Occupation must be considered; great care should be taken to adapt the near vision lens to the distance habitually required in the occupation. The piano and bridge player need special consideration; the double bass player in the orchestra must, perforce, view his music at double or more than the usual reading range. The amount of accommodation remaining in presbyopic eyes is not always equal; if found unequal, tests should be made to determine whether dissimilar reading additions will not prove more comfortable.

Far too little attention is paid to the estimation of the precise refraction in eyes with corneal deformities and opacities, in eyes with chronic glaucoma and in eyes with early cataract. Painstaking, prolonged and repeated tests will often yield results surprising to the examiner, and immensely gratifying to the patient—results not predictable on the basis of the known pathologic process in the eye. There is no more fascinating game (to the enthusiast in refraction more stimulating than bridge or cross-word puzzles) than the contest with the patient to provide him with the ultimate in vision-improving glasses. We have used the term "contest" advisedly. Given an unintelligent, unresponsive patient, one who has never been trained to make accurate observations, who tires easily or who is openly antagonistic, and it is a game that should arouse in the examiner the well known American competitive spirit. As in other games, the examiner may find himself defeated, but if he has made a valiant effort to do his best he will go down with colors flying, and undiscouraged, will be ready and eager to repeat his efforts on the next patient.

With the advance of cataract, the hyperopic eye loses its hyperopia or becomes myopic in varying degrees. It has been our experience that many examiners—and this statement applies to ophthalmologists as well as optometrists—are content to sharpen distance vision by prescribing minus spheres and wholly disregard the associated astigmatism. This practice often leads to overcorrection of the myopia, the examiner piling on all the minus spheres possible in an effort to secure better acuity; usually a spherocylindric combination, which measures the true refractive state, implies a weaker sphere. It has been our experience that as a rule, a lens representing the true refraction of such eyes is gratefully accepted. With advancing cataract, the astigmatism may change rapidly in amount and axis; such eyes, therefore, require frequent retests. On the other hand, some of our patients with early cataract rebel against the spherocylindric combination which yields the highest acuity and insist that a plain sphere is more comfortable.

The patient with beginning cataract is even more interested in securing a reading lens that will promote him from being a reader of "headlines only" to ability to read ordinary newspaper or magazine print. To attain this end the greatest care must be taken to determine the exact cylinder (and precise axis), and sometimes it will be found that the best axis of the cylinder for reading purposes does not coincide with that which has been determined at 6 meters. Even if the cataract is so far advanced that an acuity better than 6/30 is not secured and it is found that plus additions do not enable the patient to read better than J. 5 or 6, the best combination can be incorporated in a Zeiss telescopic spectacle; thus reading vision may often be raised to J. 1.

We have no apologies to make for stressing the importance of securing the most accurate correction in eyes with early cataract or quiescent glaucoma. The best interest of a very old and decrepit person is not always served by performing a surgical operation of any sort, and there may be any number of cogent reasons for avoiding, or at least postponing, operation. In the meantime, it is our duty to afford as much comfort and solace as possible by giving all possible optical aid.

METHODS OF EYE TESTING

In recent years comparatively few papers have dealt with the consecutive steps in eye testing, leading to a determination of the lens to be prescribed. (A notable exception is the excellent paper by Bahn.[1]) The adoption of a definite routine, permitting of variations, to suit the exigencies of unusual conditions, seems to us a necessity. Not all examiners will be satisfied or successful with a set formula; it is far better that each should develop a method which, while conforming to the principles of physiologic optics, yields a large measure of satisfaction to himself and comfort to his patient.

Our own method is a composite of several well known procedures and was adopted with a view to providing all necessary checks. It is a great satisfaction to reach identical conclusions as to the strength and axis of the cylindric component using (*a*) the astigmatic dial and cross-lines and (*b*) the cross-cylinder.

First, a word as to equipment. It is vitally necessary that one's test lenses should measure, both singly and in combination, the refractive power of the finished lens as it comes from the optician. Various manufacturing opticians are now supplying Vertex refraction test lenses which conform to the requirements just stated. Jackson[2] and others have pointed out the advantages of planospheres and planocylinders.

The trial frame should be comfortable, capable of independent lateral movements of each cell, with protractor scale accurately etched on each rim. We consider it advisable that the milled head which rotates the revolving cell containing the cylinder should be large and accessible so that the patient himself may twirl the screw at certain stages of the test. The refraction corridor should be dark or at least in half light. An excellent arrangement is that described by Olsho.[3] The test letters are in a four-sided box, with central illumination evenly diffused by reflection from mirrors lining the four walls. In addition to the test card—we prefer the Thorington chart with letters subtending an angle of 4 minutes—we have astigmatic charts, both radiating lines and rotatable

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1. Bahn, C. A.: Eliminative Subjective Testing for Glasses, South. M. J. **14**: 732 (Sept.) 1921.
2. Jackson, Edward: Advantages of Plano Trial Lenses, Am. J. Ophth. **10**: 266 (April) 1927.
3. Olsho, S. L.: Range for Refraction Embodying New Features, Am. J. Ophth. **8**: 57 (Jan.) 1925.

cross-lines, and the little Maltese crosses (in three sizes) which Beach[4] devised as an aid to the detection and measurement of astigmatism. Our astigmatic charts are based on Lancaster's[5] charts. We have had a draughtsman draw, in india ink, on the finest of white cardboard, radiating lines 3 mm. in width, at intervals of 10 degrees. To economize space, this chart is shaped like an old-fashioned fan, the lowest radii being extensions, respectively, of the 10 and the 170 degree line. The cross-lines 4 mm. in width are drawn on a circular disk which can be rotated around a pivot at the center. Occasionally we use Friedenwald's[6] charts—black lines bordered by white on a gray background—and find them useful with some patients. Our ranges are 6 meters = 20 feet.

The preliminary examination is made with the greatest care. We believe that none of the tests should be performed perfunctorily. After noting the visual acuity without glass, the patient is greatly overfogged—to a point where vision is not more than 6/80. The lights illuminating the test letters are turned off. The patient is requested to look vaguely in the direction of the test cabinet, now in semidarkness. He is instructed to make no effort to see clearly. After waiting several minutes, the examiner begins to "lift the fog" by turning on the lights illuminating the test charts. The patient is urged to read all he possibly can and is given time to decipher some of the letters on the line below the one he states he can clearly see. A certain amount of levity is permissible in the effort of the examiner "to sell" the fogged line of letters to the patient. We have found it useful to offer a fictitious prize, the more incongruous the better, e. g., "a big cigar" to the women, or "a powder puff" to the men, in an effort to amuse and awaken interest in the test. For other patients a serious explanation, with an appeal for all possible concentration on the matter in hand, serves the purpose better. In testing children it is necessary to proceed slowly, to gain their confidence, to discuss their dolls or their pets, to enlist the active help of the mother in pointing out the letters or symbols, and in every way trying to metamorphose your activities and the child's into a game. Therein lies the value of interesting pictures—we use Ewing's pictographs (cross, pitcher, ring, square, chair, star, etc.)—which we find originally more interesting to children than the "E" card, and are eagerly asked for at the reappearance of the child for the cycloplegic test. The acuity of the very youngest children is better secured, perhaps, by the use of the "E" card because it is not necessary for the child to name the symbol, but merely to designate its position by positions of the hands. For such children the refinements of subjective testing are out of the question; it is best to rely on a correction based on careful and repeated skiascopy. But for the child of 5 to 8, our skiascopic findings are always supplemented by a subjective test which can often be made with surprising accuracy.

In older children and adults we try to secure intimations of the existence (or nonexistence) of astigatism by the observation of the fan chart while the patient is still under a fair amount of fog. At this point we confirm these intimations by the use of the cross-cylinder, and endeavor to secure a spherocylindric combination which yields not better than 6/10 vision, and which makes the cross-lines of the astigmatic chart appear "matched" (not in sharpness of outline, but having "an equal degree of blur"). Reduction of the sphere will now increase acuity and the cross-cylinder is again used to determine whether an increase or decrease in the cylinder is required. The cross-cylinder is now used (method of Jackson,[7] modified by Crisp[8]) to determine the precise axis. As a final check-up we make the round of the trial case with 0.12 D. spheres and cylinders. Having felt the need for greater refinement than is afforded by the use of the 0.12 D. cross-cylinder, we have had ground a cross-cylinder consisting of a —0.06 D. sphere on one side and a + 0.12 D. cylinder on the other. Given a low astigmatism, which has been perfectly corrected, an observant patient can detect no difference in the sharpness of the smallest letters in the two positions of the cylinder, but one cross-line of the astigmatic cross will be found to be better defined when the plus axis of this very weak cross-cylinder is parallel with the plus axis of the cylinder in the frame, and the other cross-line will be sharper with the cross-cylinder turned 90 degrees.

THE TEST UNDER CYCLOPLEGIA

The skiascopic estimate is placed on the patient, and the acuity noted. A weak sphere, either plus or minus, that improves vision, indicates whether the sphere in the trial frame is to be changed. The axis of the cylinder is determined by the cross-cylinder. The strength of the cylinder is also determined by the cross-cylinder. When vision has reached 6/7.5 +, the cross-lines (modified Lancaster chart or Friedenwald's chart) are displayed, with one axis corresponding to the position of the cylinder axis in the trial frame. The 0.12 cross-cylinder is used in the two positions. If there is a reversal in the distinctness of the cross-lines with a reversal of the 0.12 cylinder, it is an indication that the cylindric component is correct to less than 0.25 D. The sphere is reduced to yield 6/6 or 6/6 + acuity. The 0.06 cross-cylinder is used as before and the cylinder allowed to remain as it is in case of reversal in distinctness of lines, or changed in accordance with the indications of the cross-cylinder. Finally, the axis is redetermined by using the 0.25 or occasionally the 0.50 cross-cylinder.

There are some patients who experience difficulty in detecting the minute differences in lines and letters when the 0.12 and 0.06 cross-cylinders are used; under these circumstances we have found clear intimations by having the patient observe the smallest of Beach's Maltese crosses with these weak cylinders held in the two positions.

The postcycloplegic test is begun by placing the correction found under cycloplegia in the trial frame and making such modifications as may be necessary. The astigmatism is determined both by the cross-cylinder and astigmatic chart. We are inclined, in case of disagreement, to place the axis of the cylinder at the meridian indicated by the cross-cylinder. Nearly every eye with regular has also some irregular astigmatism, which is either not brought to light by observation of radiating lines or, if in evidence, it appears in a confusing way (as a group of clear lines, say at 10 o'clock and another group not at right angles to the first group). It is our belief that the cross-cylinder, used in the manner described by Jackson and Crisp to determine the axis of the cylinder, insures the placing of the cylinder at an axis that will serve the patient best for visual acuity and comfort, although this axis may not coincide precisely with the axis as indicated by the line or lines selected as the most distinct on the astigmatic chart.

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[4] Beach, S. J.: Test Type for Refraction, Am. J. Ophth. **11**: 209 (March) 1928.

[5] Lancaster, W. B.: Subjective Tests for Astigmatism Especially Astigmatic Charts, Tr. Am. Acad. Ophth., 1915, p. 167.

[6] Friedenwald, J. S.: Sensitive Test Charts for Refraction, Am. J. Ophth. **7**: 8 (Jan.) 1924.

[7] Jackson, Edward: The Astigmic Lens (Crossed Cylinder) to Determine the Amount and Principal Meridians of Astigmia, Ophth. Rec. **16**: 378, 1907.

[8] Crisp, W. H.: A Plea for More General Use of the Cross-Cylinder, Tr. Am. Acad. Ophth. **27**: 178, 1922.

ATTITUDE OF EXAMINER

If an examiner is to have the greatest number of successes—and as a corollary, the fewest number of failures—he must study the personality of each patient. Therein lies the fascination of the art of refraction for any one who enjoys contacts with all sorts of human beings. As there is no man or woman so utterly depraved that there is not some bit of goodness lurking in the depths, so there is no one (unless he is an imbecile or still lower in the grade of intelligence) that cannot be aroused to some degree of intelligent cooperation in this test for glasses by the right "approach" on the part of the examiner. The examiner should have broad human sympathies and a clear understanding of the diverse attitudes of those who seek his services. He should be tolerant of all, even of those whose point of view differs markedly from his own. The effort to understand the other fellow will engender a sympathy between examiner and examinee that will tend to secure that very necessary cooperation without which the subjective test is likely to fall short of its most perfect results. Thus, too, is created in the patient a confidence in the examiner whose words of admonition and advice, when the new glasses are first worn, will not fall on deaf ears. To the patient with compound hyperopic astigmatism who has been carrying on with spheres or no glasses at all, the induction into his new compound lenses with, perhaps, the cylinder placed at an oblique axis, is a trying period and unless he be fortified with a full explanation of the discomforts and distortions which he is almost sure to experience he may discard his glasses forthwith, heaping maledictions on the head of the unfortunate examiner, whose reputation is bound to suffer by the oft repeated tale of how "I couldn't wear his glasses—they nearly drove me wild."

THE USE OF CYCLOPLEGICS

The controversy between the habitual users of cycloplegics, the occasional users and the nonusers, which has raged with much ardor for the last half century, still continues.

We are firm believers in the use of cycloplegics. Furthermore, we are convinced that their use should be extended far beyond the usually accepted limit of 40 or 45 years. On this point we are in agreement with Sumner.[9]

It is freely admitted that careful users of noncycloplegic methods often obtain results that are satisfactory to their patients. Any method that will enhance the precision of noncycloplegic refraction is worthy of commendation and it is for this reason that Dorland Smith's[10] method of cyclodamia has its distinct and useful place. Such a method, in our opinion, should be regarded as a useful adjuvant and should only rarely be relied on exclusively to determine the prescription.

Our belief based on long experience is this: A knowledge of the static refraction is necessary, not only for the present prescription, but also for the future management of the case. The behavior of the accommodation is often misbehavior; in other words, it is rarely possible to estimate in any given case whether we are dealing with a factor that is nearly constant or decidedly variable, and such uncertainty is abhorrent to one who desires to keep his feet on solid ground.

We habitually use a cycloplegic (homatropine) up to the age of 55 or even 60 and find two principal advantages in this practice: first, we put in temporary quiescence the accommodation which in so many of these uncorrected or partially corrected cases of presbyopia is in a state of pathologic tension due to the outrageous burden that has been imposed on the ciliary muscle; second, we often unearth small, but important, astigmatic errors which have eluded us in the preliminary test. It goes without saying that the mydriasis is not attempted if we have the faintest suspicion of glaucoma, and is always promptly counteracted at the conclusion of the test with physostigmine (eserine) or pilocarpine.

One who has been imbued with the many indubitable advantages of the shadow test and who, through constant practice, has become adept and accurate in his estimates, may reach such a degree of certainty that he feels that subjective tests are of minor importance; that if there is a discrepancy between the shadow estimate and the patient's choice of lens, there must be something wrong with the patient. Such a "mechanistic" view is no more tenable in the field of refraction than it is in the vast problems of the universe. The examiner should remember that it is his function to give comfort to a patient as well as to a pair of eyes, rather than to justify his superlative ability as a skiascopist. The subjective test remains today, as always, the court of last appeal.

It is our opinion that all children up to the age of 15 (and many older) should have the benefit of a test under atropine. The strength of the solution will vary with the age of the child. We prefer 0.5 per cent up to 10 years and 1 per cent over 10 years, used three times a day for at least three (preferably four) days prior to the test. Rather than forego the advantages of atropine, we prefer to adopt the plan of E. V. L. Brown[11] and use drops in one eye at a time, thus permitting the child to continue school work without interruption. We have never seen any disadvantages from this practice. For young persons with myopia we insist on a longer period of atropinization (one week or more) before making the test.

THE FINISHED PRODUCT

The mechanical art of the optician reaches its highest expression in the United States. More beautiful designs are constantly being developed. Prescription opticians are skilful in adapting the frame to the face so that the combination is harmonious. It is surprising, therefore, to note how frequently the "fitting" falls far short of an ideal. Rarely, indeed, do our patients who have been previously examined appear with frames which are not too wide or too narrow, the latter defect being almost universal in "pince-nez." The lenses are frequently too far from the eyes; they are placed too high or too low; possibly the upper edge of the lens comes in contact with the eyebrow or the lower edge with the cheek or nose. Only rarely is there the slight forward tilt of the lens, the so-called pantoscopic position, which is necessary in reading glasses to insure that there is a minimum of obliquity in looking through the lens. Bifocal segments are too often improperly centered; they are often too large to permit easy side

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[9] Sumner, P.: Remarks on Refraction, Am. J. Ophth. 5:712, 1922.

[10] Smith, Dorland: Refraction Under Cyclodamia, Am. J. Ophth. 9:896, 1925.

[11] Brown, E. V. L.: Personal communication.

glances through the distance portion. The adoption of small (13 or 14 mm.) round or D-shaped segments, with the lower edge terminating several millimeters above the lower edge of the frame, is a great boon to many who, literally, have found the old style large segments occupying from one quarter to one third of the total lens area, a serious "stumbling block."

In this paper we have purposely omitted consideration of the ocular muscles, as we desired to limit our discussion solely to problems of refraction. We do not neglect a careful estimate of the heterophorias, the nearpoint of convergence, convergence or divergence excess or insufficiency, and our refraction estimates are often modified by these findings. We have been especially impressed with the frequency of hyperphoria and thoroughly believe in its correction.

But, as Kipling would say, "that is another story," which we may tell at some future meeting of the section.

ABSTRACT OF DISCUSSION

Dr. William H. Crisp, Denver: No man who is not in love with his job can do good refraction, and if any young man is considering the study of ophthalmology and likes it all except refraction, he had better get another job, because he will not be fair to the great majority of his patients and he will not be fair to the profession of ophthalmology if he cannot do good refraction. I had an excellent example recently of the influence small differences in adjustment of the frame have on the patient's comfort. A man with high myopia and some astigmatism, who does a good deal of close work, had come to me for refraction and returned complaining rather vaguely of discomfort in using his glasses. He was disturbed by the reflection that occurs from the back to the front of the lens and then into the eye. I tilted his glasses down about 5 degrees more, and he called me in a day or two to say he was very comfortable. In the work of the American Board for Ophthalmic Examinations, in the refraction section, we have been distressed by one thing. I believe that every refractionist should be familiar with some precise test for measuring astigmatism other than retinoscopy. I was asked yesterday if we did not pass a man because he did not use a cross cylinder. I denied the imputation, but I believe every candidate should be able to use either the astigmatic dial or the cross cylinder. If we do not take care of our refraction work we shall certainly encourage the development of optometry as a profession.

Dr. C. W. Rutherford, Iowa City: I am going to mention some observations that have come to me in the training of young men to do this work. We have had until recently a two-year service. We are now trying the three-year plan. The first duty of an intern is to pay his way by becoming proficient in refraction, and the more proficient he is the more rapid will be his advancement. We concentrate on that feature. The intern is fortunate in that he has available consultation at all times. We do not accept any student for a short period. The report sheet contains everything that we believe is essential to writing a prescription, and some things that may not be essential but which we wish to know. These reports all come over my desk and they are checked item by item. After the intern has had about five or six months' experience we notice there is a tendency to leave out this little point or that, and unless corrected, the next week he is leaving out more little points. The remedy is to have him send for his patient to come back. It is an inconvenience that he does not want. He learns to do his work properly the first time. The reason the intern omits these points is that he gets overconfident and thinks he can understand his patient without going through all the tests. I want to emphasize that poor training is responsible for more inexpert refraction than any other one thing. If we kept these students down to facts, if we kept them from acquiring unwise procedures and slipshod methods, kept them right on the line, by the time their two or three years has expired they have acquired habits that are rather firmly established.

Dr. Laura A. Lane, Minneapolis: I believe that even in our higher institutions we do not devote enough time to teaching refraction. I had a great deal of difficulty when I first began because I worked with a preceptor, a man finely trained in his work, but who did not devote much time to teaching refraction. Refraction was the hardest subject for me before the ophthalmic board. I had to spend much extra time on this subject but it has paid in many ways. If we do good refraction work, it not only benefits the patient but extends further than we know. It makes the patient easier to live with and it brings us other patients. The authors spoke of glaucoma. I agree that the patient should be given every possible aid in the way of obtaining sight, and I am often surprised to have patients say they have been told that glasses cannot do them any good. I recently had an experience with a man who was a high-class mechanic, who had glaucoma. He was put into a home and told that there was no use to go to a physician. He had less than 3/60 vision in one eye. In six months he came up to 6/20 + without operation. He goes around alone and is a much happier person. Dr. Green suggests the use of homatropine up to the age of 55 or 60. I have not used it beyond 48, and I am glad to know that it can be used safely up to 60.

Dr. E. L. Jones, Cumberland, Md.: I am happy to see this paper on the program. It will have a tendency to revive greater interest in one of the most important fields in ophthalmology. Twenty years ago I began to realize some things that are not commonly accepted, and one is the importance of absolutely exact astigmatic correction, the use of all the time and patience necessary, and most of all one's best efforts in refracting people who have reached or are long since past the presbyopic age. I am also pleased to see that the authors are coming out positively on the necessity of having the pupils somewhat dilated in these cases. It is impossible to get true fixation of the axis in the small pupils of old persons. I do not dilate the pupils with full strength homatropine as in young persons. I never do it without taking the tension, and omit the weak mydriatic if the tension is elevated. Eye-stress acts on the autonomic nervous system, causing cold hands and feet and many other things from disordered vital organs; and improvement in these persons oftentimes depends just as much on the exact correction of a little astigmatism, whether it is by itself or in the presence of several diopters of hyperopia or myopia, as on correction of larger defects. Many persons can be enabled to go on to useful lives by attention to these details just as much as by a major surgical operation for the removal of gallbladder or appendix when these cause ill health or invalidism.

Drs. Hans Schroeder, New Orleans: Refraction is highly interesting. It requires a thorough knowledge not only of anatomy, physiology and pathology, but also of physics, mathematics and psychology. More than a third of the cranial nerves go to the eye. This seems significant and leaves room for research on the relation of eye abnormalities to systemic diseases and vice versa, especially the significance of refraction in this respect.

Dr. S. B. Muncaster, Washington, D. C.: I find the ophthalmometer a help in nine out of ten patients in making an examination for astigmatism of the cornea. It takes time to learn how to use this instrument. Dr. Bull taught me how to use the ophthalmometer in 1890 when he and Javal were perfecting the instrument. I believe I brought over the first ophthalmometer to this country.

Dr. Thomas D. Allen, Chicago: I want to protest against the high-handed methods frequently used by physicians, particularly those who dilate pupils and order glasses directly from the observations with the retinoscope without much trial case work, in saying to the patient, "These are the right glasses and you must wear them even if they are uncomfortable." The patient is the final judge. He comes to us for relief. After we have done our work carefully we should see that the patient gets into the hands of some one who can fill the prescription accurately. I should like to ask a question: Why is it we occasionally see a patient who should wear a cylinder say of 3 diopters, but who prefers a sphere even although after careful checking, with drops and without, no sphere is found?

Dr. John Green, St. Louis: I agree with Dr. Crisp that the tendency to determine the strength and axis of the cylinder solely by means of the retinoscope is to be deplored. Dr. Rutherford has outlined a correct method of teaching refraction. The student is not primarily thrown on his own resources, he is not allowed to work out his own salvation but is made to consult with instructors in charge of the work. If he becomes careless he is quickly brought on the carpet and made to see that he cannot neglect a single detail of the test and be a successful worker. Dr. Lane has pointed out the change in disposition of some patients who have received the proper correction. I am sure that is perfectly true. We know that children, after receiving appropriate lenses, especially if they have compound hyperopic astigmatism, are tremendously altered, mainly because they are able to cope with their school tests. A child develops an inferiority complex if he cannot do as well as his fellows in school; but when we give him better functioning eyes he quickly gains confidence. Dr. Muncaster's praise of the ophthalmometer I agree with, with reservations. It is a useful instrument and a time saver in many instances; but the information thus gained should be regarded as merely suggestive. The astigmatism of any eye is a composite of several factors and it is not wise to pin too much faith on the corneal element alone.

SOME UNTOWARD EFFECTS OF ACETYLSALICYLIC ACID

R. W. LAMSON, Ph.D., M.D.
AND
ROY THOMAS, M.D.
LOS ANGELES

It has been emphasized many times that allergic responses may be precipitated or aggravated by a wide variety of agents. Ample evidence has been published to prove the importance of drugs in this connection. The one that receives most frequent mention—probably because of its widespread use—is acetylsalicylic acid. Not a few patients are aware of their clinical sensitivity to this drug before they consult an allergist; this was true in three of the four cases mentioned here and usually it is advisable to accept the patient's statement without further experimentation. A few brief reports of cases may emphasize this and other points.

REPORT OF CASES

Case 1.—Mrs. C., white, aged 54, complained of a cough, paroxysms of dyspnea with wheezing, and frequent attacks of bronchitis.

For fourteen or more years she had had attacks of bronchitis, and several years before her present illness her condition was diagnosed pulmonary tuberculosis of the fibroid type. The remainder of the history was not relevant to the present complaints.

Her family history was indefinite as to allergic tendencies.

In July, 1928, without associated symptoms, she experienced her first attack of paroxysmal dyspnea. This was of short duration and was not repeated for a month or two. In the spring of 1929 these attacks became more severe, and ultimately the symptoms were practically constant. The dyspnea was aggravated by exercise or by coughing. The patient stated that she was sensitive to acetylsalicylic acid, and this was borne out by her severe and protracted response to a small dose administered without her knowledge. Epinephrine usually afforded relief but was of little value in this attack.

Allergic tests failed to demonstrate any etiologic factor. A few months later the patient was urged by a friend to try a new "cure" for asthma. To have a margin of safety, she took only half of the dose usually recommended. The attack did not seem to be severe, and she tried this new remedy as a *substitute* for epinephrine. In a few minutes after the powder had been ingested the symptoms became acute and one of us (R. T.) was called, too late to see her alive, as she died in less than half an hour after her attempt at self medication.

Case 2.—Miss C., aged 62, complained of a cough, severe dyspnea and some wheezing. Her present illness began about sixteen years ago in February, while living in Michigan. At first the symptoms suggested bronchitis. This was accompanied by some wheezing, which readily responded to simple remedies. Her history suggests a pollen etiology, but she has not had the allergic tests. She followed the advice of a friend and tried one 5 grain (0.3 Gm.) tablet of acetylsalicylic acid in an attempt to relieve a mild attack of dyspnea. Her description of the severe aggravation of the symptoms that followed is more than presumptive evidence that the drug was not well tolerated. The list of cultists she has consulted and the nostrums she has tried would occupy several columns. She was asked whether she had ever experienced an unpleasant reaction from any "patent medicine." In reply to this she vividly described her response to the "cure" mentioned in the previous history. She also took but a part of one powder, and the attack of dyspnea that followed was so severe that she became unconscious; she stated that the physician remained in attendance for several hours. She had no idea of the contents of this "cure," so a psychic response seems improbable.

Case 3.—Mrs. M., aged 55, complains of recurrent attacks of itching of the nose and sudden nasal obstruction; frequent attacks of dyspnea with wheezing, and a cough which often results in her raising "tapioca" sputum.

In the past eighteen years her condition has become progressively worse, until she now has paroxysms of dyspnea practically every two hours. She is always worse in hot weather, is improved at the beach and usually obtains complete relief when on a fishing barge about two miles off shore. Other facts in her history point to some sensitivity, but thus far allergic tests have not been made.

A friend advised her to try the same "cure" used by the patients in the previous reports. The ingestion of one of these powders was followed by an attack of severe dyspnea which required epinephrine for relief. Her history is not definite with respect to drug idiosyncrasies.

Case 4.—Mrs. H. M., aged 51, had symptoms suggesting a true hay fever in the spring and summer of 1913; she also experienced mild wheezing but no acute paroxysms. Occasionally she used acetylsalicylic acid for its analgesic effect. This drug always caused marked exacerbation of nasal symptoms. There are no indications of an abnormality of any of the more important systems.

The family history reveals that her mother may have had bronchial asthma.

Since 1925, the dyspnea and wheezing have become more severe, and she was not expected to recover from one or two attacks. Allergic tests have failed to reveal any etiologic agent. She, also, was advised to try the "cure" under discussion. One powder, employed to relieve a mild paroxysm, markedly aggravated her symptoms. Five hours of self medication afforded no relief. A physician finally interrupted the attack after hypodermic medication. She was not then aware of the composition of the powder.

The nostrum referred to in these case histories is "M. Matte's German Asthma Powder," which is extensively used by asthmatic patients in this territory. A communication addressed to the Bureau of Investigation of the American Medical Association brought the reply that preliminary and qualitative tests showed the presence of acetylsalicylic acid and caffeine. Bromides, iodides and local anesthetics were not found. There is nothing on the label of these powders to indicate their composition, but it would appear that the two ingredients caffeine and acetylsalicylic acid are the most significant and possibly the only active ones in the nostrum.

SUMMARY

1. Drug idiosyncrasies in allergic patients are not infrequent. An abnormal response to acetylsalicylic acid is probably more common than to any other drug.

2. Nostrums containing this compound are not "harmless" from the standpoint of the allergic individual. Four cases are reported in an effort to substantiate that point of view. One patient died within a short time after taking a small dose of this nostrum.

1930 Wilshire Boulevard—1136 West Sixth Street.

A CONDITION SIMULATING HUMAN SCLERODERMA IN RATS INJECTED WITH PARATHYROID HORMONE

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In the course of the collection of experimental data on rats injected with parathyroid hormone[1] it became evident that young suckling rats receiving in some cases only a single injection of 5 units of parathyroid extract intraperitoneally develop within some days a specific skin disease.

This condition presents itself first as a hardening of the skin on the back, extending bilaterally from the head to the lower border of the ribs. Within two or three days the hair over these areas begins to fall out and concomitant with these phenomena the skin becomes harder and thicker. Ulceration of these symmetrically arranged affected areas takes place in some parts, and finally after healing a bare, hairless, atrophic skin results.

When examined histologically, the areas under consideration show a marked hypertrophy of the fibrous tissue in the skin, between the epithelium and the layer of the hair follicles. The areas of fibrosis tend to degenerate, and in sections stained by von Kossa's method amorphous deposition of calcium may be seen in the degenerated and necrotic parts. The calcium deposition appears to be secondary to the initial fibrosis of the skin because large areas showing marked fibrosis are free from calcium deposition.

This condition in rats possesses striking points of similarity with the human diseases known as scleroderma and sclerodactylia, in which conditions there occurs a connective tissue hypertrophy in the skin, likewise mostly in symmetrical distribution, together with degeneration of this hypertrophied connective tissue and ulceration of the affected areas. Finally healing results in the atrophic skin over these areas.

A perusal of literature on this disease in man tends to indicate that scleroderma may be related to hyperparathyroidism.

The available reports in the literature tend to suggest that the parathyroids play a rôle in scleroderma, because in most cases the blood calcium is high. Calcification of the skin and the subcutaneous connective tissue has been reported in many cases,[2] and Weidman[3] has even reported calcification in the arteries in a newborn baby affected with scleroderma.

The present report offers further substantiation for the concept that hyperparathyroidism is related to scleroderma. It would seem that a number of human diseases of hitherto obscure origin are related to parathyroid malfunction. Osteitis fibrosa represents one manifestation of this condition, as Jaffe, Bodansky and Blair demonstrated. As this paper indicates, scleroderma seems to be another such manifestation.

It is perhaps of some interest in this connection to mention another condition which, in the light of experiments now under way, appears also to be related to parathyroid malfunction. This condition is known as marble bone disease (morbus Albers-Schönberg). In fact, the experimental observations indicate that a marked sclerosis with eburnation of the metaphyseal regions of the bones can be produced when parathyroid hormone is administered to young rats in increasingly graded doses. The condition resembles strikingly the marble bone disease seen in man. It is interesting to note that Péhu, Policard and Dufourt[4] described recently a case of marble bone disease with high blood calcium and marked hypertrophy of the parathyroids.

It would be interesting in the light of these observations to determine the effect of parathyroidectomy in the diseases mentioned.

THE CONTRARY THERAPEUTIC AND SEX RELATIONSHIP OF SYPHILIS AND TUBERCULOSIS

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AND
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It might seem strange that an apparently significant though commonplace therapeutic phenomenon associated with the two most prevalent chronic diseases—syphilis and tuberculosis—should not be clearly recognized in clinical practice. That it is not so recognized can be due either to its very obviousness or to the fact that one so frequently thinks of the therapy in these two diseases from the purely specific, the etiotropic, point of view that the underlying autogenic mechanisms involved in clinical improvement are forgotten.

Successful therapy of syphilis, apart from the consideration of the primary lesion, involves the exposure of the spirochete. The physician seeks to "dig it out" as it were, and he does that by the catabolic activity of the alteratives—iodides, arsenicals, mercury, shock reactions. Activation phenomena, inflammation and digestion are encouraged. Protective tissue barriers are broken down by removing connective tissue and by increasing permeability of membranes. When exposed, the spirochete is apparently destroyed either by serum action (lysin, lipolysis, proteolysis) or by direct cellular effects.

The successful therapy of tuberculosis—and for the moment we would limit the discussion to pulmonary tuberculosis—is diametrically the reverse of this. Therapeutic measures that expose the tubercle bacillus, i. e., the catabolic phase of alterative therapy in the sense that we have just used it, bring about prompt activation, cavitation, dissemination, and death of the patient. Recognized therapy seeks rather to enhance the isolation of the virus, to accelerate the formation of connective tissue defense. When alteratives are used, the dosages are such as are presumably followed by anabolic effects.

We believe that the clinical appreciation of these therapeutic differences is too well established to require elaboration.

But if this antipodal therapeutic behavior is a fact, one might anticipate similar divergences of clinical reactivity to natural biologic alterations occurring in the

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[1] The preparation used was parathyroid extract-Collip (para-thormone-Lilly), provided by Eli Lilly & Co.

[2] Longmead, F. S.: Proc. Roy. Soc. Med. **12:** 94, 1919. Weber, F. P.: Brit. J. Child. Dis. **10:** 97, 1913. Thibierge and Weissenbach: Ann. de dermat. et syph. **11:** 129, 1911. Scholefield and Weber: Brit. J. Dermat., September, 1911. Davis: Am. J. Dermat. & Genito-Urin. Dis., November, 1912. Olson, G. M.: J. Cutan. Dis. **35:** 96 (Feb.) 1917.

[3] Weidman, F. D.: Necropsy Findings in a Case of Congenital Scleroderma and Sclerodactylia, Arch. Dermat. **1:** 375 (April) 1920.

[4] Péhu, M.; Policard, A., and Dufourt, André: Presse méd. **39:** 999 (July 4) 1931.

From the Department of Pathology and Bacteriology, University of Illinois College of Medicine.

body, which may perhaps be interpreted from the same point of view.

Differences in the clinical behavior observed in syphilis and tuberculosis incidental to the sex of the patient form the basis for the present discussion.

Syphilis in women, as compared to that in men, is relatively benign. Quite apart from the fact that the primary lesion so often escapes detection, syphilologists have frequently commented on the fact that the secondary clinical manifestations are comparatively mild. And, of course, syphilis of the central nervous system occurs approximately in a ratio of 1 to 3 as compared to the male.

On the other hand, the female is much more susceptible to pulmonary tuberculosis. The death rate rises to a distinct peak by the time the patient is 15 years of age and remains much higher throughout the young adult period (chart 1).[1] The clinical recognition of this sex difference finds its expression in the old aphorism that "the tuberculous woman is killed by her menstruation" and in this marked susceptibility (which, incidentally, becomes apparent after the tenth year), and in the resulting death of the young female one can readily recognize the basis for the gradual increase in the resistance of a tuberculosis saturated population by the effectual method of selective removal of the susceptible female strain before reproduction.

Clearly, then, one finds a recognized therapeutic antagonism cropping out in the sex difference, the female being relatively resistant to syphilis and relatively susceptible to tuberculosis.

Fundamental differences inherent in the menstrual cycle of the female must be considered in the study of this interesting phenomenon, and in chart 2 we illustrate only some of the biologic alterations that we believe are of importance for the problem.

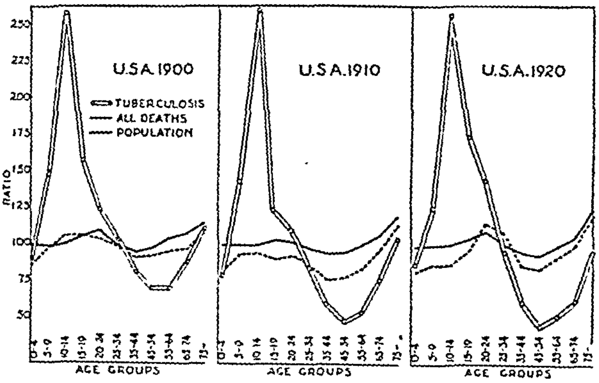

Chart 1.—This chart, prepared by Lloyd Arnold, illustrates the relative female mortality for tuberculosis as compared to the male mortality for different age groups (double line). The broken line represents the relative proportion of females in all deaths for each age group as compared to the males. The solid line represents the proportion of living females to males in the population in the various age groups. The proportion of females to males is indicated throughout on the basis that males are 100 per cent.

Arbitrarily dividing the cycle into two parts, (1) from the midmenstruum to the menstrual period (premenstrual period) and (2) from the menstrual period to the midmenstruum (postmenstrual period), we find premenstrually:

(*a*) A marked increase in capillary permeability.

(*b*) A relative increase in acidity.

(*c*) A reduction in the intermediary oxidation.

(*d*) An increase in the blood and tissue chloride with fluid retention.

(*e*) A decrease in cholesterol.

(*f*) A decrease in the carbon dioxide content.

(*g*) An increase in the activity of proteolytic and lipolytic enzymes.

(*h*) An increase in hormone activity (thyroid, suprarenals, pituitary, sex).

(*i*) Autonomic instability.

In the postmenstrual period these alterations are diametrically reversed. Of course, the magnitude of the changes varies in different individuals, but the general character of the rhythm is quite uniform (chart 2).

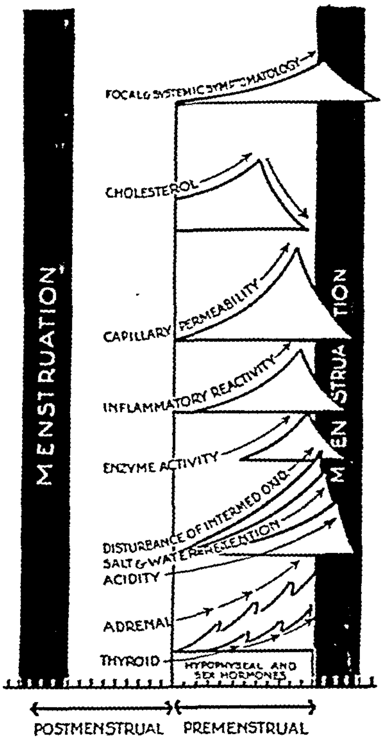

Chart 2.—Diagrammatic scheme to indicate some of the constitutional, hormone and chemical changes and their relation to the menstrual period. In the case of the hormones, there are apparently definite fluctuations in the secretion from the thyroid and suprarenal glands. This becomes evident from the autonomic instability that is apparent during the premenstrual phase.

We have mentioned but a few of the changes that are observed. Many more are perhaps of importance, including the calcium and potassium ratios, the blood sugar, and the amount and proportion of blood proteins.

The tuberculosis of the female is clinically more active premenstrually (temperature, tendency to hemorrhage, physical manifestations, symptomatology); postmenstrually it improves.

We can readily account for the increased activity. Increasing acidity of the tissues (evident in changes in the *p*$_H$, carbon dioxide content and intermediary oxidation), increasing capillary permeability, salt and water retention, and the activation of proteolytic enzymes increase the focal reactivity; decrease in cholesterol apparently lessens detoxication; the autonomic instability associated with the hormone changes accounts for the marked vasomotor fluctuations with the resulting alternation of vascular spasm and hyperemia. In this the relatively passive pulmonary circuit merely reflects changes taking place in the splanchnoperipheral balance of the distribution of blood.

The inflammatory reactivity, as measured in irritability of cells and permeability of capillaries, is distinctly enhanced. For the labile tuberculous process this means increased digestion, absorption of toxic materials, distribution of the virus (a premenstrual bacillemia has been demonstrated) a distinctly unfavorable constellation from the point of view of the clinical improvement of the patient.

Practically these changes correspond to those that are induced when a "shock" reaction, no matter how mild in degree, takes place in the patient, as, for instance, with the various forms of nonspecific therapy.

But the same biologic reorientation takes place every month with the syphilitic female. She, too, begins to "activate" her lesions, has a greater inflammatory reaction at the site of the accumulation of virus, and exposes and disseminates the virus.

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[1] Chart 1 illustrates this point very clearly with American statistics.

Granted this profound and definitely periodic biologic upset and its inevitable effect on the existing tubercle and on the syphilitic lesion, the question immediately comes up, Why should the tuberculous woman die and the syphilitic woman improve? The answer must lie in the character of the virus. The activation of the tuberculous lesion involves not only profound intoxication but the dissemination of the virus. And this dissemination takes place at a time when the endothelium of the body is apparently in a receptive condition for implantation and proliferation of the bacilli. It must also be kept in mind that the virus of tuberculosis in its varied forms is relatively resistant to destructive influences. Contrasted to the tuberculous virus, the spirochete succumbs readily to humoral or cellular influences under conditions associated with the activation of inflammation. Therapy, as we have pointed out previously, is directed to that end.

Biologic changes incidental to the sex cycle in the female readily account for the peculiar lack of resistance of the female to tuberculosis and the relative benignancy of syphilis.

In many respects the change in the menstrual cycle can be compared with the effects that one sees with nonspecific or "shock" therapy. In both instances a disturbance is found in acid base equilibrium, in permeability, in endocrines and in the autonomic apparatus. In both instances identical effects on the localized foci of these two chronic diseases are found. Repeated "shock reactions" produced by peptone injection in tuberculosis induce activation, virus dissemination and death, as Holler determined. This is true, too, with large doses of biologic or chemical specifics such as tuberculin or "Sanocrysin." But repeated "shock" effects in syphilis are often followed by amazingly rapid therapeutic success in resistant syphilitic lesions and by some syphilologists are included as a routine in treatment, milk injections being given alternatingly with arsenicals or mercury. Engman and his associates are engaged in a study of the subject in this country.

It is probable that autonomic—and with it endocrine and chemical instability—may also influence the course of a syphilitic infection in the male, and Hecht[2] has sought confirmation by an analysis of the percentage of positive Wassermann reactions in individuals with genuine asthma, assuming that with each attack some degree of biologic shock effect will be associated, which ultimately must have an effect on a preexisting syphilis.

On this assumption the incidence of positive serum reactions (Wassermann or Kahn) should be less among asthmatic patients than the normal expectancy for comparative groups of the population.

In analyzing the results for Cook County Hospital, Hecht[2] found between 17 and 18 per cent of positive reactions for the years 1927 to 1932 for all services, including male and female. The true asthmatic patients, however, showed only positive reactions from 3 to 5 per cent. While, of course, not conclusive, the evidence seems to point in the direction that has been suggested.

SUMMARY

The established therapeusis of tuberculosis and of syphilis is antithetical. The alteratives,[3] in which category nonspecific therapy may be included, used in dosages followed by catabolic effects, are effective in syphilis but harmful in tuberculosis.

The biologic changes incidental to the female sex cycle have a corresponding contrary effect on these infections. Tuberculosis in the female is more malignant, syphilis generally more benignant, the reasons being found in the enhanced inflammatory reaction of the premenstruum.

The sex liability of the tuberculous patient finds clear expression in the mortality curve, while the relative protection of the syphilitic female is demonstrated in the greatly lessened incidence of neurosyphilis. Fundamentally, of course, the difference in the ultimate clinical effect of the identical biologic cycle lies in the ability or disability of the tissues and fluids of the body to dispose of the virus which is disseminated when premenstrual activation of localized lesions takes place.

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[2] Hecht, Rudolph: The Wassermann Reaction in Asthma, Illinois M. J. **59**: *366* (May) 1931.

[3] We realize that the term alteratives is no longer in vogue among pharmacologists, but from the therapeutic point of view the classification is distinctly justifiable. Depending on the dosage, either anabolic or predominantly catabolic effects may be elicited.

HYPOPHYSEAL CACHEXIA (SIMMONDS' DISEASE)

WITH REPORT OF THREE CASES

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In 1914, Simmonds[1] reconstructed from necropsy studies of two cases the clinical syndrome which results from destruction of the anterior lobe of the hypophysis. Since that time a number of cases have been described in the German literature, although none appeared in the English language until Graham and Farquharson[2] reported four cases in 1931.

Clinically the syndrome is characterized by premature senescence, generalized atrophy of all tissues, gradual failure of the body functions, mental torpor, apathy and death. The literature on the disease was reviewed to 1922 by Knoll,[3] and to 1930 by Werner Merz.[4]

ETIOLOGY

The destruction of the anterior lobe of the hypophysis may be caused by a number of primary and secondary conditions, and a review of twenty-four selected cases with autopsy observations from the literature suggests the following principal factors in the order of their importance: puerperal sepsis (septic embolus), 9; syphilis, 5; cyst, 4; tuberculosis, 2; unknown, 4.

The outstanding cause is that resulting from the infected embolus of puerperal sepsis, although ten of the twenty-four cases selected were in males. Three of the four cases reported by Graham and Farquharson[2] were from this cause. In Simmonds' original cases the arteriola propria hypophyseus (Benda) was involved; in a separate discussion of this phenomenon he says[5] that emboli are not rare in the gland, and while they cause small nests of infection in the neurohypophysis, in the anterior lobe such emboli may remain without reaction but give rise to anemic infarcts because the vessels of this part may be looked on as end arteries. In neither of Merz's[4] two cases was the entire lobe destroyed, but the eosinophilic cells were shrunken, while Budde[6] says that metastatic tumors invading this lobe increase the cachexia beyond that ordinarily produced by cancer. Many authors conclude that in certain cases there is no outstanding contributing cause of the disease except "endogenous constitutional factors."

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[1] Simmonds, Morris: Ueber Hypophysisschwund mit todlichem Ausgang, Deutsche med. Wchnschr., 1914, p. 401; Ueber Kachexia hypophysaren Usprungs, ibid. **421**, 190, 1916.

[2] Graham, D. A. L., and Farquharson, R. F.: Simmonds' Disease, Tr. A. Am. Physicians, 1931; abstr. J. A. M. A. **96**: *1987* (June 6) 1931.

[3] Knoll, W.: Beitrag zum Bilde der hypophysaren Kachexia, Wien. Arch. f. inn. Med. **4**: *555, 1921.*

[4] Merz, Werner: *Beitrag zur Frage der Enktehang der hypophysaren* Kachexia, Frankfurt. Ztschr. f. Path. **40**: 452, 1930.

[5] Simmonds, Morris: Ueber Embolic processes in der Hypophysen, Virchows Arch. f. path. Anat. **217**: 226, 1914.

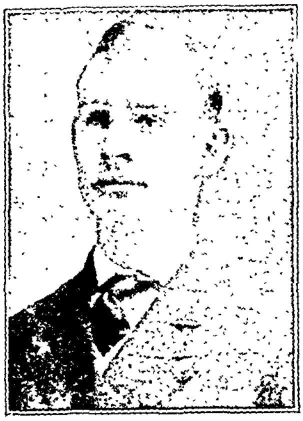
Fig. 1.—Patient 1, at age of 21, weighing 170 pounds (77 Kg.).

SYMPTOMATOLOGY

The basis of symptoms of Simmonds' disease is progressive atrophy of tissue. Weakness, loss of weight, rapid aging, falling hair, anorexia and loss of sexual function are prominent symptoms. An initial polyuria and polydipsia are frequently early symptoms and are emphasized in four of the twenty-four cases reviewed. The loss of sexual function is always present and is usually an early symptom. These two conditions are prominent in other diseases of the hypophysis and they serve only to direct attention to this gland.

Physical examination shows a shiny dry atrophy of the skin, sometimes confused with that of the thin subject of myxedema, a loss of body hair, the marked loss of weight, but most strikingly the premature aging of the patient. In men the testes are atrophic, the beard is scanty, the voice is hollow, and muscular strength is greatly diminished. An underlying pathologic process (i. e., syphilis, tuberculosis) often masks the conditions found with the exception of the premature senility. In addition, there is a definitely lowered basal metabolism, marked secondary anemia, and often a disturbance of the sugar metabolism. The prognosis is by no means fatal, particularly in cases resulting from syphilis, since Simmonds followed a case for eighteen years, and Oppenheimer[7] has had one under observation for twenty years.

Case 1 is typical of Simmonds' disease presumably due to acquired tertiary syphilis:

Case 1.—*History.*—A man, aged 47, an American laborer of Irish extraction, entered the University Hospital outpatient department, April 2, 1930, complaining of weakness, stiffness of the joints and constipation.

The patient's father died of uremia at 75 years of age, and the mother of apoplexy at 78. Aside from the tendency to arterial disease, the family history was negative.

The patient contracted syphilis and buboes at the age of 22, and was treated by means of mercury rubs at Hot Springs, Ark. Heavy indulgence in alcohol at the age of 42 led to sanatorium care, at which time the patient's right arm became temporarily paralyzed.

The present illness began following treatment for acute alcoholism four years before admission, when the patient weighed 172 pounds (78 Kg.), and his appearance of youthfulness caused him to be taken for his daughter's brother. The symptoms began rather acutely with weakness, followed by polyuria. He was admitted to a hospital at this time for treatment of polyuria, it being necessary for him to drink "a quart of water every few minutes." This symptom subsided in four weeks, and a gradual loss of weight and appetite supervened, the patient losing in two years from about 170 to 102 pounds (46.3 Kg.). For a time following the onset he was so weak that he could not get out of bed without assistance. Stiffness of the joints was prominent. Sexual powers disappeared immediately after the onset of the illness, and his appearance changed to that of a man of 60 years. The previously abundant body hair was lost. When first seen, the patient stated that he shaved every two weeks, felt cold and was quite unable to keep warm.

Examination.—The physical examination showed the patient's emaciation and his slow mental reactions; he was much older in appearance than his age indicated. The skin showed marked atrophy (Dr. Wile). The hair of the scalp was grayish and thin and consisted only of a border fringe. The body hair was absent with the exception of a slight amount on the forearms. The nails were extremely thin and fragile. Arcus senilis was present and the mouth was edentulous. The thyroid gland was palpable and was normal in size. The thorax was asthenic. The lungs were clear. The heart was perpendicular and not enlarged. The blood pressure was 98 systolic and 70 diastolic. The heart rate at rest was 72 per minute. The abdomen was scaphoid, with no organs palpable. The testes were markedly atrophic. The deep reflexes were present. There were no signs of syphilis of the central nervous system and no general or regional glandular enlargements.

Laboratory examination revealed: urine, clear, highest specific gravity 1.030; peripheral blood: hemoglobin (Sahli) 75 per cent; red blood cells, 3,600,000; white blood cells, 4,600; polymorphonuclears, 59 per cent; lymphocytes, 35 per cent; mononuclears, 2 per cent; eosinophils, 5 per cent. There was moderate anisocytosis and moderate central achromia of the erythrocytes. The Kahn test was 1 +; repeated, negative. The basal metabolism was —36 per cent. The pulse rate was 58. The stool was negative for parasites or ova and for occult blood. Roentgen studies revealed that the gastro-intestinal tract showed an atonic, ptotic, stomach without evidence of gastro-intestinal pathologic changes (Dr. Hickey). Examination of the chest revealed asthenic cage, some thickening of the

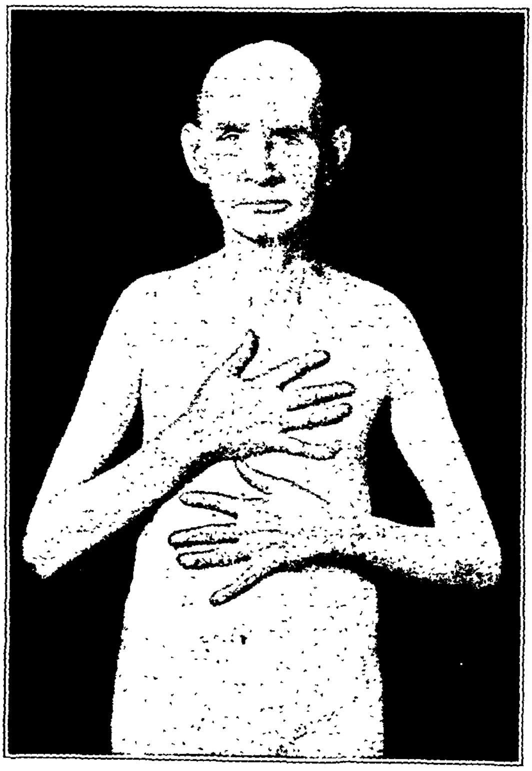
Fig. 2.—Patient 1, at age of 47, weighing 103 pounds (46.7 Kg.).

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6. Budde, Max: Zur Kenntnis der bosartigen Hypophysengeschwulste und hypophysaren Kachexia, Frankfurt. Ztschr. f. Path. 25:18, 1921.

7. Oppenheimer, B. S., in discussion on Graham and Farquharson (footnote 2).

right apical pleura. There was emaciation. The heart was of the "drop" type, normal in size (Dr. Pierce). The skull was normal except for calcification of the pineal body; the sella turcica was normal (Dr. Hodges). Gastric analysis showed no free hydrochloric acid in any specimen (after histamine, 0.1 mg.). Dextrose tolerance tests were not done, and an examination of the spinal fluid was omitted.

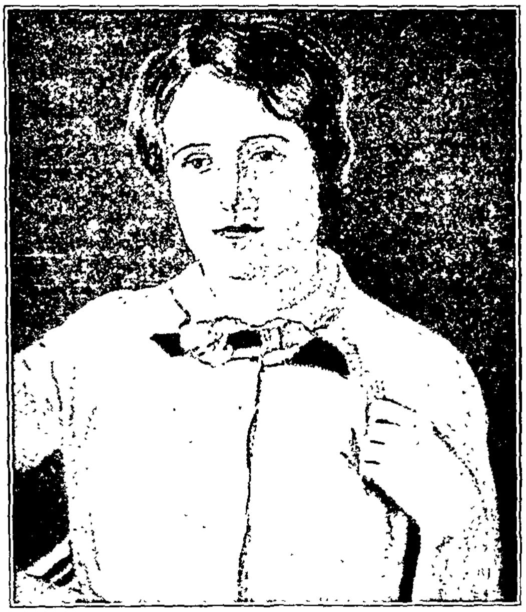

Fig. 3.—Patient 3, at age of 22, weighing 120 pounds (54.4 Kg.).

The case showed the following manifestations consistent with the syndrome of Simmonds' disease: premature senility, atrophy of skin and testes, marked loss of weight, low basal metabolism, loss of body hair, anemia, weakness, loss of appetite, chronicity, and subnormal blood pressure.

Course.—The case was diagnosed as myxedema and latent syphilis, and the patient was admitted to the ward for treatment with desiccated thyroid gland. The basal metabolism was increased to — 1 per cent with a pulse of 112, but without subjective improvement in symptoms. After the paper by Graham and Farquharson and the subsequent discussion was heard, the diagnosis of Simmonds' disease suggested itself immediately, and further studies were carried out with this diagnosis in mind. Treatment has been continued with bismuth and iodide, and desiccated thyroid gland, and the patient has improved in cycles sufficiently to be ambulatory. By dietary treatment his weight has increased to 114 pounds (51.7 Kg.), and constipation is avoided. There has been no change in appetite or in strength.

Case 2 illustrates many features of Simmonds' disease as well as some features of acromegaly:

Case 2.—*History.*—An American laborer, aged 55, entered the University Hospital, Dec. 17, 1925, complaining of weakness.

The father died of arthritis at 71 years of age and the mother died of apoplexy at 65. Aside from a tendency toward arthritic diseases, the family history is negative.

The patient stated that he did not have syphilis and gonorrhea by name and symptom. Little alcohol had ever been used.

At the age of 35 the patient began to notice weakness. Associated with this symptom he had frequent attacks of nausea and vomiting, which lasted eight years. Numerous sick headaches were present with pain over the right eye and in the crown of the head. His weight during this time decreased from 203 to 170 pounds (from 92 to 77 Kg.). At the age of 41 he first noticed diplopia, which had persisted periodically since. His headaches were relieved by glasses. During the past fourteen years he had noticed that he had slept more than normally. His bowels had been moderately constipated during the past twenty years. During the past twelve years he had noted a loss of 10 pounds (4.5 Kg.) and a marked disappearance of his facial hair, so that it was necessary to shave only once a week. During the past four years the pubic hair had become scanty, and the axillary hair disappeared three years before entrance to the hospital. Since the onset of his trouble he had been compelled to do lighter work and during the past six months his weakness had been so great that he spent most of his time in bed.

The patient was married at 20. His wife was living and well. This union produced five pregnancies; two children, living and well, and three miscarriages. During the past ten years the patient noticed that his sexual capacity had become limited.

Examination.—The patient was fairly well developed and had a blank facial expression. The skin appeared to be flabby but otherwise was normal. The hair of the scalp was fine in texture. The body hair was absent in the axillae and on the chest and was scanty over the pubes. The pupils were round and equal, but the left pupil was sluggish in its reaction. There was failure of convergence of the right eye and a definite blindness of the temporal half of the right eye. The teeth showed much caries. The voice was not hoarse. The thyroid gland was palpable. There was a dorsal kyphosis of the thoracic vertebra. The lungs were clear. The heart was slightly enlarged. The blood pressure was 130 systolic and 70 diastolic. The rate was 84 and the rhythm regular. The abdomen was normal in appearance. No glandular enlargements were palpable. No signs of syphilis of the central nervous system were present.

Laboratory examination revealed the urine normal at all times; hemoglobin, 65 per cent (Sahli); red blood cell count, 4,420,000; white blood cell count, 6,300; polymorphonuclears, 51 per cent; lymphocytes, 39 per cent; mononuclears, 6 per cent; eosinophils, 3 per cent, and basophils, 1 per cent. The red cells were normal except for moderate achromia. The Wassermann test was negative. The basal metabolism varied from — 18.6 per cent on the first determination to — 23 per cent (Tissot). The spinal fluid was normal. Detailed studies of the sella turcica showed practically complete absorption of the lime salts in the lower and posterior clinoids. The destruction was suggestive of neoplasm. Examination of the fundus by Dr. George Slocum showed angiosclerotic changes in both eyes with marked edema. The right eye showed optic atrophy and a loss of convergence. The visual fields showed a right temporal hemianopia. The dextrose tolerance test was: fasting, 0.083 per cent; first hour, 0.114 per cent; second hour, 0.087 per cent; third hour, 0.083 per cent. The urine was normal in all specimens during the course of the test. The diagnoses of pituitary tumor, right temporal hemianopia and peripheral arteriosclerosis were made. The patient died very suddenly, and necropsy showed the following:

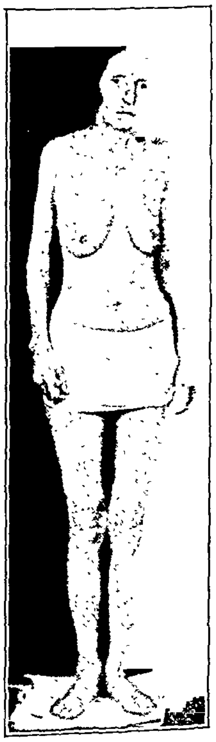

Fig. 4.—Patient 3, at age of 41, weighing 100 pounds (45.4 Kg.).

Necropsy.—The general nutrition was good over the abdomen and thorax but showed some wasting over the extremities. The facies was thin and somewhat acromegalic in type. There was atrophy of the muscles of mastication. The right eye showed a superior lateral strabismus. There was a moderate increase in the size of the thyroid gland. The thorax was essentially normal. The skin was inelastic and soft. The hair of the head was abundant and fine in texture. The beard was scant and fine. The axillary hair was absent. The pubic hair was scant, fine and delicate. There was a yellow purulent discharge from the right ear. The head was normal. The brain was not sectioned. The hypophysis was represented by a large tumor mass, completely filling the large sella. It was very soft in consistency and was pedunculated. The infundibulum was much thickened. On removal, the mass was necrotic and was partially destroyed. There was compression and thinning of the right optic nerve. It was no larger than a few strands of thread. The left optic nerve was also somewhat thinned. The petrous portion of the temporal bone was removed, disclosing a right purulent otitis media and mastoiditis. The gross examination of the thorax and abdomen and their contained organs was negative except for edema, congestion and a seropurulent exudate expressed from the right lung. The pelvis showed an apparently normal penis and scrotum. The testes showed moderate fibrosis.

There was a malignant adenoma of the pars intermedia (adenocarcinoma) of the pituitary gland. Abundant colloid was present. There was marked hypoplasia of the heart; atherosclerosis of the aorta; congestion, edema, and areas of healed chronic fibroid pneumonia of the lungs. The bronchial nodes, thyroid, spleen, small intestine, appendix, stomach, pancreas, liver, prostate, seminal vessels and bladder were essentially normal. The suprarenals showed extreme congestion and small inflammatory infiltration of the cortex. The testes showed complete aspermatogenesis. Patches of fibroid atrophy were present not resembling syphilitic areas. The stroma was relatively increased and edematous. The interstitial cells were markedly atrophic.

The clinical diagnosis was pituitary tumor, hypopituitarism, bronchopneumonia, acute right-sided otitis media and mastoiditis.

The pathologic diagnosis was malignant adenoma of the so-called pars intermedia (adenocarcinoma) of the pituitary gland; hypopituitarism; aspermatogenesis; atrophy of the bronchial nodes; old obliterative appendicitis; old fibroid pneumonia and localized pleural thickenings; nephrosis with glomerular hypertrophy; general passive congestion, and parenchymatous degeneration.

Although case 2 presents some features of hyperpituitarism and some of hypopituitarism, many features of Simmonds' disease are present. The process probably began as a nonmalignant adenoma of the hypophysis and as it increased in size it eventually destroyed the anterior lobe. The weakness extended over a long period and apparently was the first symptom; the loss of sexual powers and the loss of body hair were the last to appear. The appearance of premature aging was not striking, owing to the retention of body weight. Other features of senility praecox were present, however. This case illustrates Erdheim's[8] belief that adenomas causing acromegaly have the symptoms of both hypopituitarism and hyperpituitarism.

Case 3.—*History.*—A white woman, aged 41, a native of Michigan, complained of weakness and loss of weight. The father died of a stroke at the age of 70 and the mother died of pneumonia at 60.

After numerous heterosexual experiences the patient was married at 20, from which union there is one child living and well. The first pregnancy was followed by a series of miscarriages.

The menstrual periods ceased at the age of 26. At 30, she noticed a lack of sweating, and eczema of the skin during the winter months. At this time she worried about her appearance of "growing old" and of increasing weakness. At 36 she experienced a "stroke," which left a residual paralysis of the right side of the face and deviation of the right eye. Recently there had been nasal trouble, a feeling of constant chilliness, weakness, poor appetite, loss of libido, and loss of memory. There was a total loss of weight of about 20 pounds (9 Kg.) during her illness.

Examination.—The patient had the appearance of a woman of 60, emaciated, weighing 80 pounds (36.3 Kg.). The skin was atrophic, dry and cold. The eyebrows were sparse; there was no body hair; the hair on the scalp was dry, grayish black and fairly abundant. The eyes showed a divergent attenuating strabismus on the right; the pupils were fixed and there was keratitis. There was marked oral sepsis. There was syphilis of the buccal cavity and of the soft palate. There was a speech defect similar to that of dementia paralytica. The reflexes were normal. The blood pressure was 120 systolic and 70 diastolic.

Laboratory examination revealed: basal metabolism, —28; pulse, 68; Kahn test, 4 plus; spinal fluid, negative; hemoglobin, 90 per cent (Sahli); red blood cells, 4,740,000; urine, clear. Dextrose tolerance test: fasting, 95 mg. per hundred cubic centimeters; first hour, 102; second hour, 90; third hour, 83.

Manifestations indicative of Simmonds' disease were: premature senility, atrophy of skin, loss of body hair, loss of libido, mental deterioration, low basal metabolism, loss of weight, weakness, and the sugar tolerance curve.

COMMENT

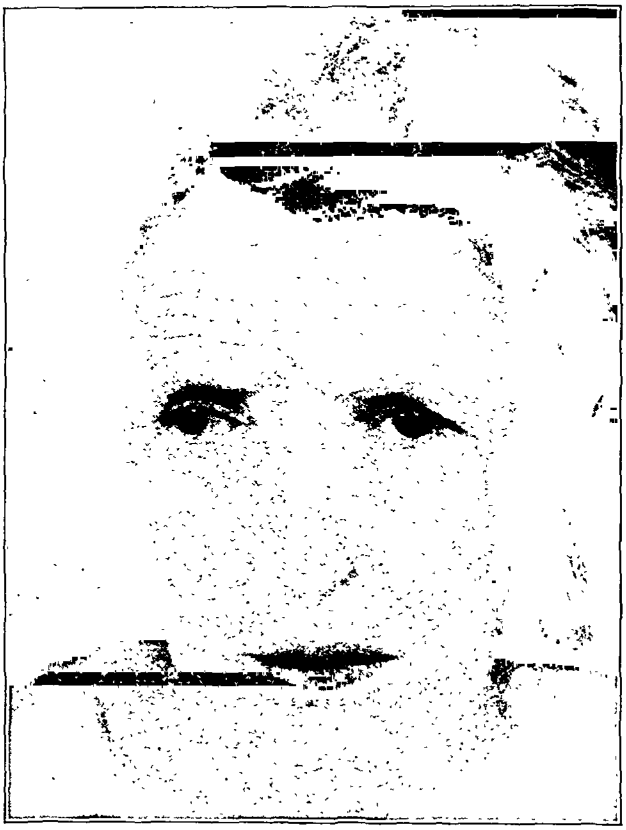

Fig. 5.—Patient 3, at age of 41.

The disease can be recognized clinically only by having in mind the possible etiologic factors and the chief presenting manifestations, which are premature aging together with generalized atrophy of the skin and other organs. Mental lethargy might be due in part to secondary nutritional disturbances and to a low metabolism. The latter, with changes in the sugar tolerance curve, is seen frequently in tumors of the pituitary gland not associated with the Simmonds syndrome. Erdheim[8] believes that the eosinophilic adenomas resulting in acromegaly are not examples of total hyperpituitarism, and that they may have certain common elements with Simmonds' disease, such as loss of strength, marasmus and a genital disturbance.

Merz[4] has reported Simmonds' disease and exophthalmic goiter in the same patient with autopsy observations. There is considerable discussion in the literature about the relation of hypophyseal cachexia to involvement of the other endocrine glands. Several cases have been mistaken for myxedema, and one experienced clinician on our staff remarked that case 3 was one of polyglandular dystrophy. The syndrome should be looked for in all tumors of the hypophysis, five cases due to cysts being reported in the continental literature. The clinical picture undoubtedly must be based on the absence of the specific growth secretion from the anterior lobe even though such a picture has not been presented in experimental animals. Generalized hypertrophy was demonstrated by Evans when he administered the secretion of the lobe to rats, and general atrophy is that seen in disease which destroys the glandular element in man. It seems established from a number of German autopsy reports that neither the posterior lobe nor the pars intermedia and related cells of the floor of the fourth ventricle are involved, only the eosinophilic cells being destroyed.

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[8] Erdheim, J.: Zusammenfassung über die Hypophysengewachse und Krankheiten, Ergebn. d. Path. 21: 547.

SUMMARY

1. An ambulatory case of hypophyseal cachexia, Simmonds' disease, in a man, aged 47, was characterized by an initial diabetes insipidus, premature senility, low basal metabolism and generalized atrophy. The history and serologic observations suggested syphilis as the etiologic factor.
2. A second case showed many characteristics of Simmonds' disease due to a tumor of the pars intermedia (malignant adenoma of the pars intermedia).
3. In a third case characterized by premature senility, syphilis was the etiologic factor.

Clinical Notes, Suggestions and New Instruments

THE PROLONGED USE OF SALYRGAN AS A DIURETIC: REPORT OF TWO HUNDRED AND SEVENTY INJECTIONS IN FIVE YEARS IN ONE CASE

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Mrs. S., aged 58, a widow, seen, May 19, 1925, was short and very broad and weighed 280 pounds (127 Kg.). Her mother died of heart trouble and was also short and very stout. One brother, who was a little over 5 feet (152 cm.) tall, had a tremendous breadth of shoulders and weighed 230 pounds (104 Kg.). He had severe chronic nephritis with hypertension and died three years later. The father, who did not have this type of body build, died of an unknown cause.

The patient had been short of breath for several years, seldom walked, and had not been down town in five years. Her feet had been swollen for a considerable time; cough and sputum were present. During the past ten days the dyspnea had increased; she felt the beating of her heart in her throat and had been in bed three days.

The skin was flushed, the lips were cyanotic, and dyspnea was marked. The blood pressure was 190 systolic and 135 diastolic. The heart was considerably enlarged to the left; the sounds were clear and regular, with a waxing and waning of rhythm, and the rate was 170. The pulse was irregular, owing to a pulse deficit. The abdomen was very obese and the liver apparently much enlarged. Edema of the legs was present to the knees.

I withdrew 200 cc. of blood by venesection, after which breathing became easier. Large doses of digitalis were given. In a few days the rapid but regular heart action (probably auricular flutter) slowed to 120 and showed a disorderly irregularity of the fibrillation type. In ten days the rate fell to 80, and she was constantly kept under digitalis thereafter. Theophylline and theobromine had no influence on the edema. She was able to be up most of the time and in fair comfort but showed no striking improvement. In February, 1926, I aspirated the right chest and withdrew 2 quarts of straw colored fluid. She was then given ammonium chloride, 10 Gm. every twenty-four hours, followed by an intramuscular injection of 1 cc. of novasurol. In the following twenty-four hours she voided 5 quarts of pale urine, most of which was passed within the first twelve hours. The second day the urine fell to 1 quart and became dark colored. Under this treatment in the spring of 1926 her weight fell from a maximum of 288 to 218 pounds (131 to 99 Kg.) with much improvement in her sense of well being. The injections of novasurol were given at intervals of from three to seven days and were speedily changed to the intravenous route, because of the pain and infiltrations produced by intramuscular injections. The following year, 1927, novasurol was changed to salyrgan, which was continued throughout the remainder of her life. The intravenous injection of 2 cc. of salyrgan produced an average diuresis of from 4 to 6 quarts. If the doses came too close together a smaller amount of urine was obtained, and experience showed that an interval of from five to seven days was necessary for a maximum effect. The largest twenty-four hour response obtained at any time was 9 quarts. These injections were continued fairly regularly over a period of five years. Early in 1929, the diuretic response seemed to be a little less satisfactory (under 3 quarts), and at the suggestion of Dr. S. A. Levine of Boston, who saw her with me, I increased the dosage to 4 cc. During the next twenty-four hours 7½ quarts of urine was passed. As time went on, intravenous injections became increasingly difficult. Sometimes the same vein could be used for repeated injections, but at other times after a single injection the vein would become converted into a firm, fibrous cord. Slight leakage of the drug would cause severe pain, and on a few occasions a superficial area of skin necrosis followed. Early in 1931 it became necessary to change to intramuscular gluteal injections of 3 or 4 cc. doses to which procaine hydrochloride was added. The diuretic response appeared to be equally good; very little pain was felt, and no unfavorable results followed. (However, in two other patients similar injections in the upper outer quadrant of the buttock produced an intractable sciatic neuritis and I should hesitate to use this particular location again.)

Many examinations of the urine were made during the six years of observation. The specific gravity varied within wide limits, and was usually above 1.020. Occasionally a small amount of albumin was present, and often hyaline or granular casts. No definite changes were noted in the urine as the years went on, and careful observations failed to show any effects whatever which could be attributed to the prolonged use of mercurial diuretics. This is all the more remarkable as novasurol (merbaphen), and salyrgan (mersalyl) are 10 per cent aqueous solutions of organic mercury compounds containing about 33 per cent of mercury. A maximum dose of 4 cc. would therefore contain 0.13 Gm. (2 grains) of metallic mercury in soluble form.

May 11, 1929, after three years of diuretic treatment, a phenolsulphonphthalein test was made. Forty per cent of the dye was returned in the first hour and 28 per cent in the second hour, a total of 68 per cent of the dye. May 29, at 11 a. m., the blood sugar was 133 mg. and the nonprotein nitrogen 40 mg. The Wassermann test of the blood was negative.

The morning of October 27, a 3.4 Gm. dose of novasurol instead of salyrgan was given intravenously. In the afternoon the patient felt ill and had two rather severe chills. She became restless and more cyanotic but passed 7½ quarts of urine in twenty-four hours. Diarrhea developed, and a small amount of blood was passed by rectum. The gums became swollen and red. The symptoms all cleared within a week. Novasurol is apparently more toxic than salyrgan, and although the patient had tolerated small doses well during the first year of treatment, this large dose produced symptoms of mercurial poisoning.

An interesting observation was the persistence of a satisfactory diuretic response during five years of treatment and up to within a few days of death. The total number of injections (mostly salyrgan) was 270. The only occasions on which diuresis did not follow were when the abdomen was greatly distended with ascitic fluid, which presumably caused pressure on important veins. As soon as the fluid was removed by paracentesis, the diuretic response was at once restored.

Read before the Syracuse Academy of Medicine, Oct. 19, 1931.

The weight fell to 177 pounds (80 Kg.) during 1929 from a previous maximum of 288 pounds. It then slowly increased to 300 pounds (136 Kg.) at the end. Restriction of diet appeared to have little effect in producing loss of weight. Thyroid gland in doses as large as 15 grains (0.9 Gm.) daily made no impression. A salt free diet seemed to be of some benefit, but the patient refused to follow it for long. Remarkable fluctuations in weight took place. She would gain 10 or 12 pounds in twenty-four hours and lose an equal amount in the same length of time after an injection of salyrgan. She persistently refused to go to a hospital, and all observations had to be made in her modest home. She weighed herself on bathroom scales and had the urine measured by an attendant.

The blood pressure slowly rose to a maximum of 225 systolic and 130 diastolic. Auricular fibrillation continued throughout and was verified by electrocardiograms, June 24, 1930, and Jan. 29, 1931. The liver could best be felt after paracentesis. It was greatly enlarged, reaching 6 inches below the costal margin in the nipple line. The surface was smooth and the edge sharp. The spleen could not be felt. Fluid was aspirated from the right side of the chest three times in 1926 and 1927 but did not have to be withdrawn thereafter. Guinea-pig inoculation with pleural fluid was negative for tuberculosis. Abdominal paracentesis was done twice in 1928 and eight times in the last fifteen months preceding death.

Because of the distress and dyspnea suffered by the patient, hypodermic injections of morphine were begun in 1928. She gradually developed a habit and required moderately large doses. This incident was regrettable, but it would have been cruel to withhold the drug.

During 1930 and the early part of 1931 her condition slowly deteriorated with a steady increase in the general anasarca and a rising weight curve. The abdomen became tremendously large; the legs were huge, and the skin broke down in several places with a leakage of fluid from the tissues. Cyanosis became intense; she drifted into a somnolent state and died, March 16, 1931. An autopsy could not be obtained.

COMMENT

An obese woman with decompensated hypertensive cardiovascular disease was given 270 injections of novasurol and salyrgan over a period of five years.

An excellent diuretic response was maintained throughout. The prolonged diuretic treatment appeared to be without harmful effects on the kidneys or other organs.

608 East Genesee Street.

SPASMOPHILIC TETANY IN THE NEW-BORN

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Tetany, or the spasmophilic diathesis, occurs chiefly in infants with some nutritional disturbance. Etiologically, it is looked on by some as a phase of status thymicolymphaticus. There is a definite constitutional predisposition to it. Some believe that it is a purely chemical deficiency due to a lack of guanidine and methylguanidine; others believe it to be a parathyroid dysfunction with a resulting calcium deficiency. According to Abt, the condition is seldom seen before the fourth month of infancy or after the third year. It is associated with a drop of blood calcium from 10 or 11 mg. per hundred cubic centimeters (normal) to 6 or 7 mg., with definite clinical symptoms, and complete recovery when the calcium content of the blood is restored to normal. It has been noted that few breast fed infants develop tetany and that most cases of this condition occur in bottle fed infants. Benjamin Kramer, in his discussion of Bass's[1] recent paper, said: "Although the clinical manifestations in all forms of tetany are identical, the chemical changes in the blood may be quite different. Although the serum calcium concentration is usually normal, there is justification for the assumption that the Ca^{++} ion concentration is reduced." As Bass and Karelitz have pointed out, although lowered calcium is an almost constant sign of tetany, equally low percentages may also be found in nephritis with no evidence of tetany. An absence of tetany has been reported with calcium of 5 mg. As Hess[2] states, the lack of complete harmony between the clinical manifestations and the calcium in the blood indicates that some factor other than the calcium concentration must be at work.

The case of tetany presented here I believe is one of the earliest reported. The condition probably existed before birth and was present at the time of birth. The patient developed typical spasmophilic convulsions thirty-six hours after birth. Unfortunately, calcium determinations of the blood were not possible; but the minutely typical clinical picture of emaciation, positive Chvostek's sign, Trousseau's sign, carpopedal spasm, convulsions starting with the eyes and extending to the extremities with clonic and tonic spasm, followed by laryngospasm and asphyxia, the prompt response to calcium therapy, and the subsequent normal development of the child justify the diagnosis. Whether this is a case of "infantile tetany" that so frequently in the literature is said not to occur in the new-born, or whether it is a case similar to the cases reported by Bass and Karelitz[1] is a purely academic question and cannot be proved because of the absence of blood calcium determination. The opinion exists that "infantile tetany" as an entity is a dietary deficiency disease. I find nowhere in the literature a suggestion that this condition must occur after birth. It could conceivably develop in utero, as it appears to have developed in this case.

REPORT OF CASE

The mother and father of the infant were both in good health. The mother, a primipara of a high strung, nervous disposition, took excellent care of herself throughout pregnancy in regard to diet, hygiene, and frequent and regular medical consultations. Pregnancy was normal. Labor was easy, normal, and of fourteen hours' duration. A full term, emaciated baby, weighing 6 pounds and 4 ounces (2,835 Gm.) was delivered. The cord was wrapped around the baby three times; the placenta showed large areas of degeneration. The baby breathed readily. He did not move readily; the arms were held in a spasm against the chest in the so-called obstetric position, the knees were flexed, and the feet were in equinovarus.

The baby was put in an improvised incubator and feedings were attempted every hour. He refused food and water. The condition remained about the same for thirty-six hours, after which convulsions started. These became steadily more frequent and severe. The body first stiffened slightly; then the eyeballs rolled back and twitched. The face became drawn spasmodically and the clonic state extended to the extremities. Breathing became labored. There were a few convulsive inspiratory efforts and then complete laryngospasm, with cyanosis, and finally a blue pallor. Recovery was quick; consciousness returned with normal respiration, but the infant seemed exhausted.

Trousseau's sign was present from the time of birth without pressure being applied. Chvostek's sign was easily elicited between convulsions. Also, Weiss's orbital spasm could be obtained.

The obstetrician thought that there was probably birth injury despite the easy, normal labor, and nothing but the mildest supportive treatment was advised. There was no family history of epilepsy. The recovery from each attack was more rapid than is usual in epilepsy and the attacks were more frequent. A careful examination revealed a full term, large boned, but terribly emaciated and feeble infant with every evidence of marked nutritional disturbance, showing every symptom and sign of tetany with the development of convulsions typical of the spasmophilic diathesis.

As the infant seemed about to die, I felt that the therapeutic test could not be delayed. The response was even more dramatic than hoped for. Six hours after treatment was started, laryngospasm had practically ceased and in fifteen hours the convulsions had entirely ceased.

The treatment consisted of calcium chloride, 7 grains (0.45 Gm.), every hour; viosterol, 3 drops every two hours; phenobarbital, one-twelfth grain (0.005 Gm.), every four hours. Forced feedings, 1 ounce of breast milk, every hour, were administered with a medicine dropper. It took forty-five minutes out of every hour to get the ounce down. In twenty-four hours the calcium chloride was stopped as it produced vomiting. The phenobarbital was stopped in forty-eight hours.

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1. Bass, M. H., and Karelitz, Samuel: Tetany Accompanied by Hyperpyrexia and Vomiting in the First Days of Life, J. A. M. A. 97:1372 (Nov. 7) 1931.

2. Hess, A. F.: Rickets, Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929.

In ten days the baby became a simple feeding problem and has developed so far into a perfectly healthy normal 12 months old baby.

Abt states that "in convulsions of the new-born, the diagnosis of cerebral hemorrhage is more frequently made than is warranted. When autopsy is systematically done, we are very often surprised at the frequent absence of cerebral hemorrhage in cases diagnosed as such." I can recall a few fatal cases of convulsions of the new-born diagnosed as birth trauma that well might have been diagnosed as tetany and treated as such.

SUMMARY

Tetany should be considered in all cases of birth injury with convulsions. It is suggested that the condition is really not rare.

A therapeutic test is indicated in all questionable cases. Delay for positive diagnosis is desirable but dangerous.

The case reported here was cured with simple methods and drugs available to all practitioners.

A NEW METHOD FOR STRAIGHTENING THE PENIS IN HYPOSPADIAS

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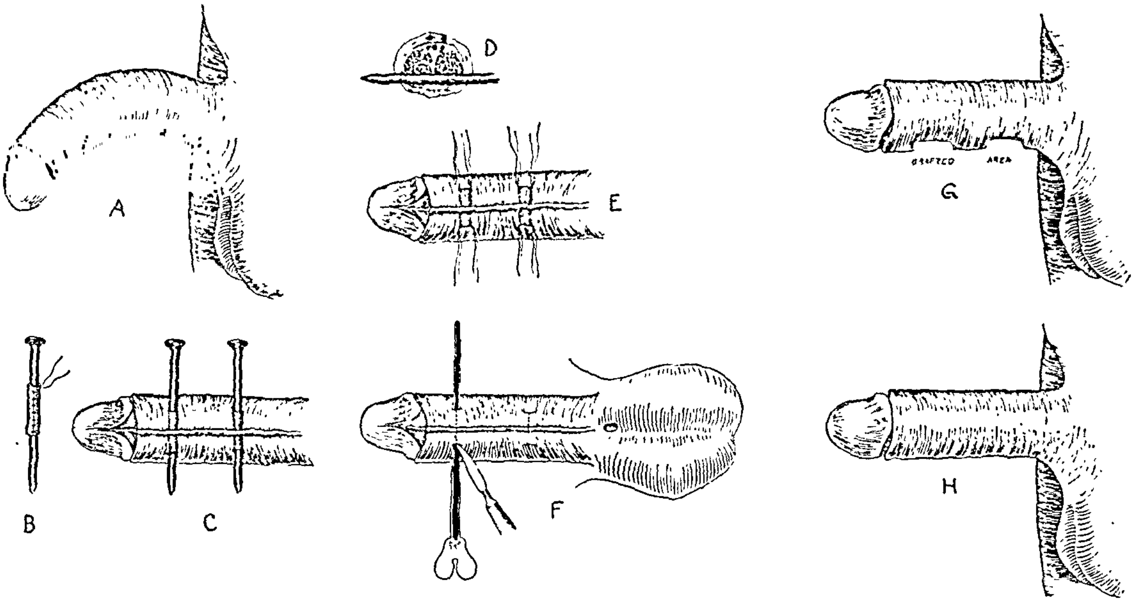
Professor of Genito-Urinary Surgery, George Washington University Medical School

The incurvation of the penis in hypospadias is caused by the shortening of the fibrous tissue which in this malformation replaces the corpus spongiosum. There is always in this location a firm fibrous band which, because it is nondistensible, causes the chordee.



Method of procedure: *A*, location of puncture through corpora cavernosa for the reception of grafts; punctures are placed above the fibrous tissue that causes the chordee. *B*, tunneled graft. *C*, puncture through corpora cavernosa for reception of grafts. *D*, transverse section, showing location of puncture for reception of tunneled graft. *E*, grafts in place, held by sutures. *F*, cutting through the healed tunneled graft. *G*, result following incision of tunneled graft. *H*, ultimate result, from three to four months after operation.

A number of plastic operations—some of them more or less successful—have been devised for straightening the penis. But the weak point in all of them is the tendency to reformation of scar tissue at the seat of operation—in many cases this scar tissue causing a return of the chordee after the wound heals.

I believe that the method here explained offers the best solution of the problem. By this method the grafts, when healing occurs, take the place of the scar tissue that in a greater or less degree forms in all plastic operations.

More than a year ago I heard Colonel Kellar, at Walter Reed Hospital, read a paper on the use of tunnel grafts to overcome cicatricial contractures in other portions of the body. Noting his excellent results, I at once concluded that the use of this graft was the solution in overcoming the contracture and consequent incurvation in hypospadias.

I have followed almost identically his technic. The operation is performed as follows:

A graft, including all the layers of the skin, is cut from the inner side of the thigh and placed in salt solution. A cannula is then thrust through the corpora cavernosa, care being taken to place it above the line of the fibrous tissue that causes the chordee. The cannula that I use is a 17 French, but the size can be varied to accord with that of the penis. After the cannula is inserted, a back-and-forward motion is made to enlarge the puncture wound. The cannula is then withdrawn; the skin graft, previously mentioned, is placed around it—the skin side next to the instrument—and two or three fine catgut sutures are used to bring the edges together. The cannula carrying the graft is then reintroduced through the puncture and the graft is slipped off, two fine catgut sutures being placed at the ends to hold it in position. Two of these grafts are usually sufficient—a succeeding one, if necessary, being placed in the same manner, and the punctures being made about 2 cm. apart. The urine is drained by a retention catheter in the opening of the perineal or the scrotal urethra, and a sterile dressing is then applied.

Rapid healing of the grafts takes place. At the end of two or three weeks a grooved director is passed through the graft and incised from within outward to the surface of the skin. Slight bleeding occurs, but it can readily be controlled by pressure. The graft tends to flatten out as soon as the incision is made, but after a month or six weeks the grafted area can be noticed only by the difference in the appearance of the skin, while palpation at the base of the graft shows no tendency to the formation of scar tissue.

In no mode of straightening the penis before performing a plastic operation to make the urethra have I observed such results as occur when the procedure here outlined is followed.

1835 Eye Street N.W.

Origin of Syphilis.—Somewhere and at some time a nonpathogenic spiral organism acquired pathogenic properties and became Spirochaeta pallida. It seems likely that this event took place in America, less than 10,000 years ago. . . . An antiquity for syphilis as slight as even 2,000 years would, I think, present no difficulties to a modern bacteriologist accustomed to the development of rough and smooth, nonvirulent and virulent colonies from one pure culture of bacteria, frequently under conditions that he can easily control.—Williams, H. U.: The Origin and Antiquity of Syphilis: The Evidence from Diseased Bones, *Arch. Path.* **13**:979 (June) 1932.

Read before the Southern Surgical Society.

Special Articles

THE CHANGING DIET OF THE AMERICAN PEOPLE

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The study of anthropology leaves no doubt of the existence of epochs in the evolution of our diet. For the preparation of food, primitive races still use methods that must have been in vogue before the era of cookery. Sun drying, grinding, burying and maceration are ancient devices for rendering edible products more palatable and digestible. Some writers have depicted the happy dietary lot of early man living in a delightful climate in the midst of nature's utmost luxuriance. "The reality," Fitch[1] remarks, "was far from this Utopian conception, which was a product of a vivid imagination. The food which he was able to obtain easily was scarcely worth gathering, and in order to satisfy the pangs of hunger and to sustain existence, he was compelled to put himself to much trouble and to undergo many dangers. This is known from the fact that certain races, whose mode of life approximates most closely that of the primitive dwellers on earth, have the greatest difficulty in eking out a miserable existence."

The development of agriculture, including the cultivation of the soil and the domestication of animals, furnished many new possibilities for the production and selection of foods derived from animals as well as from plants. The progress of cibiculture and the introduction of cookery gradually brought about long ago what has been described as "the acme of dietary excellence." Such assertions therefore raise the question as to whether our present-day diets are really changing in any fundamental way.

Recently my attention was called to "A Treatise of Foods,"[2] published at the beginning of the eighteenth century by Louis Lemery. In the preface to this interesting volume the French scientist remarks that "if foods contribute so necessarily, to the preservation of life and health; they also produce the greatest part of those distempers, to which we are subject, and many times, by the ill use of them, cause even death itself." He adds that "the ground-work of our preservation, consists chiefly in a knowledge of suiting foods to every constitution, as it best agrees with it." And he concludes with the admonition that "the knowledge we ought to be most desirous of, should be that of foods."

A mere glance at the chapter headings of Lemery's book reveals an unexpected variety of all sorts of foods, of both animal and vegetable origin, together with a formidable list of condiments and "drinkables." One's first impulse on examining the volume is to ask whether we really have changed our dietary habits, inasmuch as our predecessors of two centuries ago could present such a diversity of items familiar in today's menus. The most conspicuous omissions in the older lists involved the more refined or processed edible materials that have been developed through the efforts of the food industries in the last few decades. This is notably true, for example, of the numerous highly milled cereal products and other cereal novelties that have come to take a conspicuous place in the American meals of today. Bread—the "staff of life"—no longer retains its supreme dominance.

The diet of a group may change not merely through innovations in the foods used but also because of revisions in the choice of long familiar edible products. This may result in a shift in the proportions of the true nutrients—the proteins, fats and carbohydrates—as well as in altered preferences with respect to vitamin-bearing foods. Have there really been noteworthy changes in our national dietary? Are there "styles" in food? Perhaps the easiest way to begin the solution of these questions is to examine a few characteristic menus of the past.

Our forefathers were not unaccustomed to lavish meals. In "The Accomplisht Cook, or the Art and Mystery of Cookery," printed in 1678, there are bills of fare for every month of the year. Let me present some details of a menu for All-Saints Day in November. The first course alone includes twenty dishes, beginning with oysters, continuing through beef and capons and geese and ducks and mutton, venison and swans, veal and roast turkey, and ending with "a double-bordered custard." The second course includes twenty more dishes—oranges and lemons, and more meat dishes—pig and lamb and ducks, "a couple of pheasants," several varieties of fish, three brace of partridge, and then a dish of spinach. After the spinach, a roll of beef, a cold goose pie, and so on and so on until we finally reach the dessert—jellies and tarts and gingerbread, "and other fruits," according to the original bill of fare. Is it any wonder, a reviewer remarks, that the old cookbooks included a few chapters on medicines and salves, and "broths for the sick"?

In Mrs. Glass's Cook Book, published in 1805, one of the dinner menus to be served in three courses contained the following offerings:

First Course.—Vermicelli soup, leg of lamb, chicken and veal pie, tongue, petit patties, cod's head patties, boiled chickens, roasted beef, scotch-collops.

Second Course.—Marinated smelts, roast sweetbreads, almond tort, roasted turkey, stands of jellies, maids of honour, woodcocks, mince pies, larks, lobsters.

Third Course.—Artichoke bottoms, custards, scalloped oysters, morels, dutch beef scraped, cut-pastry, potted chars, rabbit-fricasseed, macaroni, black cup, stewed celery.

The bill of fare of the Irving House in San Francisco for a banquet on Dec. 6, 1851, lists eighty dishes. There were two choices of soup, two of fish, twelve "National Dishes" (meats), six boiled dishes (meats), four roasts, six *hors d'oeuvres,* twelve entrées (meats), ten vegetables, ten game dishes, eighteen pastries and entremets (pies, puddings, cakes), and ten fruits and nuts as desserts.

In a volume on "The Sabbath in Puritan New England," Alice Morse Earle has given a description of the supper served on the occasion of the ordination of a new pastor of the Old South Church in Boston in February, 1861:[3]

> There were six tables that held one with another eighteen persons each, upon each table a good rich plumb pudding, a dish of boil'd pork and fowls, and a corned leg of pork with

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Clinical lecture, read before the American Medical Association at the Eighty-Third Annual Session, New Orleans, May 10, 1932.

[1] Fitch, W. E.: Dietotherapy, New York, D. Appleton and Company, 1918, p. 6.

[2] Lemery, Louis: A Treatise of Foods (in French), English translation, London, John Taylor, 1704.

[3] Earle, Alice Morse, quoted from Bogert, L. J.: Nutrition and Physical Fitness, Philadelphia, W. B. Saunders Company, 1931.

> sauce proper for it, a leg of bacon, a piece of alamode beef, a leg of mutton with caper sauce, a roast line of veal, a roast turkey, a venison pastee, besides chess cakes and tarts, cheese and butter. They had plenty of old cyder, one barrel of Lisbon wine, punch in plenty before and after dinner, made of old Barbados spirit.

One of the early novels of Anthony Trollope, published in 1855,[4] describes the "breakfast-parlour" of a representative well-to-do clergyman. After discoursing about the breakfast service with its varied items of silver and china, the author referred to the viands as follows:

> The tea consumed was the very best, the coffee the very blackest, the cream the very thickest; there was dry toast and buttered toast, muffins and crumpets; hot bread and cold bread, white bread and brown bread, homemade bread and bakers' bread, wheaten bread and oaten bread, and if there be other breads than these, they were there; there were eggs in napkins, and crispy bits of bacon under silver covers; and there were little fishes in a little box, and devilled kidneys frizzling on a hot-water dish; which, by-the-by, were placed closely contiguous to the plate of the worthy archdeacon himself. Over and above this, on a snow-white napkin, spread upon the sideboard, was a huge ham and a huge sirloin; the latter having laden the dinner table on the previous evening. Such was the ordinary fare at Plumstead Episcopi.

The conditions represented by this description were not fundamentally different on this side of the Atlantic. In Robert Playfair's Recollections of a Visit to the United States[5] in 1847, 1848 and 1849 he refers to the food that he encountered in the hotels, in these words:

> Printed bills of fare were placed within reach of each guest, so that we might select what we pleased, nor did I observe any symptom of the rapid eating some tourists have described.
>
> As this dinner is a type of what is generally found throughout the Union at the best hotels, I here insert a Bill of Fare during my stay at the City Hotel, which may not be uninteresting to my English reader: the impression probably will be that these Republicans live well.

Then follows the table d'hote menu for Sunday, Aug. 8, 1847. The "first course" offered along with soup and fish (broiled fresh salmon, lobster sauce), boiled turkeys, oyster sauce, boiled rump corned beef and cabbage, boiled sugar cured ham, boiled lobster salad, boiled beef tongues, stewed kidneys with wine, macaroni with Parmesian cheese, sweetbreads with sorrel, broiled chickens with bread, stewed ducks with olives, stewed pigeons with mushrooms, fillets of fresh pork with tomato sauce. To these were added entrées as follows: poitrine de mouton, grillé, à la sauce tomate; fricandeau, à la sauce tomate; canard, braizé, aux navets; tête de veau, à la sauce tomate; huitres à la poulette; côtelettes de mouton, en papillote; pâtés de poulet; poitrine de veau, aux champignons; blanquette de veau, au currie; salmis de bigier; bifstek auz huitres; roast tame geese, apple sauce; roast young chickens; roast tame ducks; roast sirloin of beef; roast lamb, mint sauce; roast veal, roast pig, pickle sauce; squash, green corn, tomatoes, beans. A "second course" consisted of game; roast yellow-leg snipe. The "third course" included only three items of pastry; namely, ice cream and pies. The "fourth course" was devoted to dessert: almonds, watermelons, blackberries and raisins.

These are, of course, records of the best food afforded by institutions that catered to the well-to-do. In the letters of Thomas Mooney, published in 1850 under the title "Nine Years in America," it is related that "the food of the American farmer, mechanic, or labourer, is the best . . . enjoyed by any similar classes in the whole world. At every meal there is meat or fish or both. . . . The breakfast of the common people is made up of coffee or tea, fish, meat, butter, bread, potatoes, all on the table." Dinner included tea, meat, bread, hot cakes and the like.

One is impressed, in surveying such menus, by the great abundance of flesh foods in the dietary. This is true regardless of the time of day when the meals were served. The supply of muscle meats was evidently more readily maintained throughout most seasons of the year than was that of fresh fruits and vegetables. With the passing of the years there has been a gradual displacement of meats from their former dominance in the regimen. The modern statistics of the food industries indicate an increased consumption of dairy products, vegetables and sugar.

The story of sugar is particularly interesting.[6] During the early part of the last century, sugar was used primarily as a condiment. The consumption in 1823, for example, has been estimated as enough to give each person 8.8 pounds a year. This represents about 44 calories a day. Last year, somewhat more than a century later, the annual per capita consumption of sugar amounted to 108 pounds, or more than 500 calories a day. This means that sugar has become an important food, representing, on the average, nearly one sixth of our energy intake. Incidentally, this has been accomplished with a tremendous reduction in the cost of the product; 1,000 calories are being sold at a retail price of less than 3 cents.

Obviously, this change in food habits in the case of sugar has resulted in the displacement of other foods from the national diet. As I have stated elsewhere,[6]

> The fact that one fifth of our diet, nowadays, consists of this vitamin-free food is especially important because the other four fifths have also lost much of their vitamin potencies in the refining processes to which so many modern foods are subjected. Cornstarch, for instance, is a purified food; the *vitamins and salts of the maize kernels from which it is made* have been taken out. Rice, in the process of polishing, has lost most of its vitamins, and the same is true of other highly milled cereals. And not only the carbohydrate foods but also the fats and even some of the proteins in our diet are being subjected to chemical "purification" before they reach our kitchens.

The tendency toward the displacement of meat dishes, with their higher protein content, is indicated in the recent experience of American restaurants that have adopted the new fixed-price plan with the slogan of "all-you-can-eat." This means that the patron may repeat orders for any dish on the menu without added expense. An observer[7] has remarked that thus for the first time there has been a large-scale popularity contest, with no price handicaps. She further comments: "The result of the wide-open menu has not been vast new inroads on the roast beef and the mutton chops and other stalwart he-man viands." She then adds: "What we lean, dieting, strenuous go-getters of Yankees really want—according to the past year's comprehensive experiment—is more dessert! Our erstwhile suppressed desires have apparently been for ice cream on our apple pie, more peach shortcake and another chocolate eclair."

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[4] Trollope, Anthony: The Warden, 1855.

[5] Playfair, Robert: Recollections of a Visit to the United States and British Provinces of North America, in the Years 1847, 1848 and 1849, Edinburgh, 1856.

[6] Mendel, L. B.: Our Changing Food Habits, in Your Weight and How to Control It, New York, George H. Doran Company, 1927.

[7] Barnard, Eunice Fuller: New York Times Magazine, Feb. 28, 1932.

There are more objective indications of changes in our food preferences in the direction of lessened protein intake, such as a decrease in meat consumption would bring about. In the course of a long experience as a teacher of metabolism I have gathered the reports of hundreds of analyses of twenty-four hour urines of young men and women. In health the nitrogen content of the kidney output furnishes a reliable index of the nitrogenous (or protein) intake. During the nineties of the last century the estimated protein intake, after due allowance for fecal losses of nitrogen, generally approximated an average of at least 100 Gm. (16 Gm. N × 6.25) a day. In the course of the years, these annually secured estimates are showing lower averages. Other teachers have had similar experiences. The newest figures of Hetler[8] on young women in Illinois studied during the years 1928-1930 averaged 7.7 Gm. of nitrogen (equivalent to about 50 Gm. of protein metabolized) daily. This corresponds to 9.5 Gm. of nitrogen (or about 60 Gm. of protein) for a man weighing 70 Kg.

How have these changes in our food habits come about? Are they merely the result of our instincts? Several years ago my colleague T. B. Osborne wrote:

> Under normal conditions of supply and normal conditions of health, little attention is given by the great mass of mankind to the question what or how much should be eaten. They simply eat what they want and as much as they want, and then stop and go about other business. They know nothing of the dietary elements which the nutrition expert tells them are so essential for their well being, and even for their very existence.
>
> How can they long survive in such ignorance? Why does the community allow them to endanger, not only their own lives, but those of posterity? The only possible answer is that they are endowed with instincts which guide them so well, that under normal conditions of life they escape the many dangers that until recently they were unconscious of.

Instinct, which was long lauded as the safe guide to ideal nutrition and which is still heralded even by physicians, has been shown to have its definite limitations in the choice of foods by man. A generation ago Ellen H. Richards, an American pioneer who exhibited zeal for the application of science to daily life, wrote:

> It is unsafe to trust the individual to the guidance of the appetite alone, for the reason that this instinct was built up for a condition of existence very different from that which enables the people of this country to indulge themselves today.

Realizing the effect that changes in the transportation and distribution of commodities were exerting on the availability of the food supply, she sensed "conformity to scientific laws as the only way to safety."

In an address before the Second Pan American Congress in Washington, in 1916, I[9] remarked that

> The supply of food energy and its availability where needed are interrelated closely with a variety of factors, the bearing of which upon the problem at hand is not always evident upon the surface. Some of these features may be classified superficially as follows:
>
> 1. Food production.
> 2. Food preservation and food conservation.
> 3. Transportation facilities.
> 4. Customs in diet.
> 5. Changing industrial and social conditions and other economic and hygienic factors.

It is possible today to secure fresh meats, fresh eggs and fresh milk in every urban center without interruption; citrus fruits and some sorts of fresh vegetables are available throughout the entire year, even in the smallest hamlet. The opportunity of selection has thus become greatly enhanced. To these important changing factors must be added the results of research in the physiology of nutrition and the extension of popular education regarding foods and diet.

As far as the medical profession is primarily concerned, our modern knowledge has served to establish firmly the calory idea in nutrition. The advantages of intelligent "calory feeding" in infancy and the so-called high calory diets in certain types of prolonged fever, notably as advised by Coleman in typhoid, have become permanent accessions to medical practice. Newburgh has lately demonstrated anew that the successful management of obesity is fundamentally a problem of energy bookkeeping, of balance between intake and output, regardless of the existence of long periods of stationary body weight due to retention of water.

The growing information about the formerly unsuspected dietary essentials called vitamins has begun to afford intelligent appreciation where obscurity formerly prevailed; it has also permitted new interpretations of long suspected nutrient virtues in foods. The red tomato served on a green lettuce leaf can no longer be dismissed as merely an esthetic combination of water, roughage and inorganic salts. The golden citrus fruits supply something more than the tart sweetness of their palatable juices. Milk and butter have become more than rich sources of energy. Cod liver oil or concentrates thereof are being widely used as prophylactics. Salad greens are eagerly ordered and eaten. Our population is becoming "vitamin-conscious."

The discovery, in 1895, of iodine in the body, its relation to thyroid function, and its variable sources in nature, ushered in a new era of interest in "the little things" in nutrition. A few milligrams—less than a single grain—of a long recognized element spell physiologic well being that turns to disorder in their absence. The rôle and importance of calcium and phosphorus and chlorine are being elucidated more clearly every year. Copper has become an additional hematopoietic possibility where iron once reigned alone. Manganese beckons with possibilities. The inorganic elements are no longer neglected in relation to nutritive welfare. "During the past ten years," Mary Swartz Rose[10] recently wrote, "we have gradually become accustomed to thinking quantitatively in nutrition, not only in terms of calories and grams of proteins, fats and carbohydrates, but in terms of fractions of milligrams of mineral elements and vitamins." The potential acidity and alkalinity of our foods are attracting attention—perhaps even more than they deserve. In any event the physician ventures nowadays to conjure with foods as he has always done with drugs.

With the advent of modern bacteriology came the brilliant demonstrations of the specific microbiotic origins of many long known maladies of previously obscure etiology. Soon it became a natural tendency to postulate bacterial causes for every puzzling disease.

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[8] Hetler, R. A.: Protein Intake and Basal Metabolism of College Women, J. Nutrition 5: 69 (Jan.) 1932.

[9] Mendel, L. B.: Changes in the Food Supply and Their Relation to Nutrition, New Haven, Conn., Yale University Press, 1916.

[10] Rose, Mary Swartz: The Nutritional Significance of Some Mineral Elements Occurring as Traces in the Animal Body, Yale J. Biol. Med. 4: 499 (March) 1932.

Scurvy and beriberi were considered from this standpoint by more than one investigator. Little progress was made in the control of these disorders. With the growth of the newer knowledge of nutrition, however, has come the almost complete disappearance of scurvy in this country. There was a time when it seemed like a plague. It infested armies; it decimated those who traveled the seas; it put an end to more than one expedition into remote regions. In the first edition of Osler's Modern Medicine, published in 1907, scurvy was still classed with the nondescript group of "constitutional" diseases, including diabetes and gout. One can understand better what the present-day dietary management of scurvy and the prophylaxis against a once common disorder of man means by reading the views of the best writers of only twenty-five years ago. Thus, Robert Hutchison[11] wrote in the volume referred to:

> Summing up all the evidence, it seems probable that whilst a deficiency of fresh vegetables, i. e., of organic salts of potash, plays a part in the production of the disease by reducing the alkalinity of the blood, yet this does not afford a complete explanation of the occurrence of all the symptoms, and it is not unlikely that upon the soil so prepared there is grafted some specific infection which finds access to the body by the mouth. Insanitary surroundings, overwork, mental depression, and exposure to cold and damp, facilitate the development of the disease by lowering the resistance of the patient.

Today it can be said, in the words of A. F. Hess:[12]

> There is almost nothing in the realm of therapy which is so striking as a scorbutic patient's prompt reaction to antiscorbutic treatment. It is all the more marvelous as the cure is effected by means of foodstuffs with which we are accustomed to associate no specific virtue. A magic result is seen frequently within twenty-four or forty-eight hours. A baby which has had a poor appetite, has been irritable and exquisitely tender, suddenly regains its appetite, is no longer fretful, and can be handled without occasioning crying. Within a week, if the case is mild, all definite symptoms of scurvy may have disappeared, and soon thereafter the infant is thriving and apparently cured.

This is the story of the effectiveness of a food constituent, vitamin C, of which the production, in the laboratory of the organic chemist, seems imminent.

The etiology of rickets also is now better understood and its dietotherapy appreciated. The circumstance that rickets still remains so widely prevalent is perhaps a serious criticism of the medical profession and a challenge to its resourcefulness in the use of available curative and prophylactic agents.

Despite some doubts voiced now and then as to the precise etiologic background of both beriberi and pellagra in man, there are growing evidences that they belong primarily among the avitaminoses and can be averted by proper diet. Some of the practical difficulties may be attributable to the possibility that the clinical manifestations represent syndromes in which more than one dietary deficiency is involved. McLester[13] has recently asserted that the interest which vitamins hold for the physician is not alone in their relation to certain well defined diseases such as scurvy, beriberi and rickets, but rather in the fact that chronic vitamin deficiency produces numerous vague, borderline states of ill health which often puzzle the physician and disable the patient. These last are of far greater importance to the physician of today than the more clearly defined deficiency diseases.

The possibilities of accelerating or retarding growth through dietary measures alone have been indicated again and again in recent years in the experimental laboratories. Some of the discoveries have begun to be applied in human dietetics. The greater use of so-called protective foods, including fruits and vegetables, has become widespread. The insistent propaganda for the more liberal inclusion of milk in the regimen of the old as well as the young is finding acceptance. It is too early to determine the possible effects of some of the changing food habits through which in turn meats and then the cereals have lost some of their former dominant popularity. There are signs that many of our adolescents are growing somewhat more rapidly than in former generations. Is this an outcome of our modern education and advertising? Is it a wholesome trend? It is too early to answer these questions with conviction; but our menus have indeed changed.

There is no field of practical importance related to human well being in which there is greater opportunity for dogmatism and quackery, for pseudoscience and unwarranted prescriptions and proscriptions, than in the domain of our daily diet. Those who have seen the pendulum of enthusiasm swing from one extreme food fad to another in the course of the years will be wary. Let them keep an open mind, without becoming too reactionary to notice that our food habits do change.

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[11] Hutchison, Robert: Scurvy (Scorbutus), in Osler's Modern Medicine **1:** 893, 1907.

[12] Hess, A. F.: Scurvy: Past and Present, Philadelphia, J. B. Lippincott Company, 1920.

[13] McLester, J. S.: Nutrition and Diet in Health and Disease, ed 2, Philadelphia, W. B. Saunders Company, 1931.

CLINICAL ASPECTS OF VITAMIN G DEFICIENCY

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[Editorial Note.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

It is the prevalent opinion that vitamin G deficiency is intimately associated with the complex syndrome of symptoms included under the term pellagra. The complexity of the disease is so evident that some reluctance is justified in accepting the view that a single food deficiency may be responsible for such a varied series of clinical manifestations. In fact, some writers have suggested that what is called pellagra may be a mixture of diseases rather than an entity,[1] for in a given patient pellagra may involve predominantly only one system, whether this is the skin, alimentary tract or nervous system, and little damage may be done to the other systems;[2] on the other hand, all three systems may be affected. Again, the symptoms observed may be so atypical of the classic features of pellagra that they have received the name pellagra sine pellagra. At the present stage of knowledge one may accept the view that, although vitamin G deficiency is closely

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[1] Turner, R. H.: J. Clin. Investigation **10:** 61 (April) 1931.

[2] Turner, R. H.: J. Clin. Investigation **10:** 81 (April) 1931.

related to pellagra, some caution must be exercised in relying on this vitamin deficiency as being entirely responsible for the etiology of the disease. This caution is especially pertinent when preventive or curative measures are to be advocated. The discovery of the potency of the unknown factor termed vitamin G is an undoubted advance in the knowledge of pellagra, but it is clearly unwise to assume that vitamin G deficiency and pellagra are necessarily synonymous terms. In view of the experimental data available, there appears the possibility that there may be several deficiencies involved in the disease condition under discussion.

It is significant that the earliest records of pellagra are associated with a food factor. It was in 1600 that Barnino described the occurrence among certain Indian tribes in America of a disease answering to the description of pellagra, which he related to maize. Since the time of Barnino the consumption of maize and the incidence of pellagra have been closely associated. As expressed by a writer in 1917, "to weave a chronicle of pellagra without encountering the visage of maize seems almost impossible. Through the tangled skein, as it is interwoven with the destinies of several nations and peoples, we see the rise and decline of this malady almost coincident with the consumption of Indian corn, and try as we may we cannot dissociate the two."[3] The view that corn bears a specific relationship to the etiology of pellagra has been hard to eradicate, but gradually opinion has changed so that other food factors are included. In the words of Goldberger,[4] "the consumption of corn or corn products is not essential to the production of pellagra, but this does not mean that corn, the best of corn, or corn products, however nutritious or however high in caloric value they may be, are not objectionable when forming of themselves, or in combination with other cereals and with vegetables, a large part of the diet of the individual."

In latter days the conception of the factor involved in the production of pellagra has undergone a radical change. When maize was specifically related to the disease it was assumed that this cereal played its rôle by imparting a noxious agent to the dietary, a toxic substance, produced possibly by a chemical change in the process of "spoiling." As early as 1776, Venice passed legislative measures to prohibit the sale or exchange of ill smelling, ill tasting, or discolored corn. Opposed to the older view that corn causes an intoxication stands the present-day hypothesis that corn and certain other foodstuffs lack something essential to proper nutritional rhythm; in other words, they are deficient.

It must not be accepted that food factors only have been assumed to bear a causal relationship to pellagra. Such is far from the fact. From time to time points of view have been presented which included infection carried by winged insects of blood sucking habits; infection of unknown origin, and infection carried by water containing silica or aluminum. The hypothesis of infection with a living micro-organism of unknown nature has many arguments to recommend it. MacNeal,[5] who is opposed to the food deficiency theory, believes that

> the etiology of pellagra depends on two factors analogous to those recognized by Roussel: (1) the specific causative factor which is a living organism, an infectious agent derived directly or indirectly from a previous case of the disease, and (2) a factor or group of factors, quite nonspecific, which serve to reduce the resistance of the victim. In this latter group are recognized malnutrition, either from inadequate food or inability to utilize food in an adequate manner, cachexia of disease, overwork, depressing influence of hot weather, strain of reproduction in women, involution of old age, alcoholism, and many other influences. The specific causative, which I believe to be a living organism, remains unrecognized. Most probably it remains in the gastro-intestinal tract, and the absorption of its products from the digestive tract gives rise to the distant manifestations of pellagra. In regard to the factors influencing the possible transmission of the hypothetical parasite, as well as those which may influence the resistance of the human individual, a great many facts have become established by epidemiologic studies in pellagrous districts.

Plausible and convincing as the infectious theory may appear, current opinion inclines to the view that if infection plays a rôle in pellagra it is of secondary importance and not causative. Much more significant are the factors that MacNeal terms nonspecific.

The incidence of pellagra is widespread. Every nation of Europe, including England, has had its experience with pellagra. In general, however, the disease has made less headway in the countries of the temperate zones than in those of warmer climates. It was not until 1863 that the disease was first clearly described in the United States. The high mortality in certain of the Southern prison camps during the Civil War has been ascribed to this disease. Since this period, pellagra has gained great headway in this country, especially in the Southern states, until today it is quite as prevalent as in Europe, if not more so. It seems quite inexplicable that in the United States, where so much has been contributed to the knowledge of nutrition, especially to the knowledge of vitamins, and where principles of nutrition have been so popularized that nearly every one has a speaking acquaintance with foods and food values, a disease presumably essentially related to food maladjustment should become so prevalent and should be decidedly on the increase. The situation is becoming relatively acute.

That diet plays the predominant rôle in the production or prevention of pellagra was first clearly established through the investigations of Goldberger and his associates. It was demonstrated by Goldberger, Waring and Willets[6] in 1915 that clinical recovery is obtained by proper feeding and is maintained as long as proper diet is continued. The dreaded recurrence of the disease does not take place in individuals receiving adequate nourishment. According to these authors there is no good evidence that the disease can be prevented by any other means. Having established that the disease may be prevented by proper diet, Goldberger and his associates[7] next attempted to induce the disease by selection of what they considered a diet resembling that found associated with a high incidence of pellagra in earlier studies. In this investigation six of eleven subjects developed the disease, whereas none of the control subjects evinced any symptoms.

The food factor responsible for the production of pellagra was at first associated by Goldberger and Tanner[8] with the amino-acid content of the proteins included in the diet. It was concluded that the essential etiologic dietary factor is a specific defect in the amino-acid supply, probably in the nature of a deficiency of a special combination or combinations of amino-acids. On this hypothesis, an investigation of the therapeutic and preventive value of casein was undertaken. In 1925, Goldberger and Tanner[9] reported that while the casein had had a beneficial effect on the general nutrition of their patients and in considerable measure prevented or, at least, notably delayed the development of the distinctive eruption, it did not prevent, though it may have delayed, the relapse or recurrence of some of the other symptoms of the disease. They concluded, therefore, that the protein factor, if it is concerned in pellagra, is not the sole preventive or causative factor and thus that some heretofore unrecognized or unappreciated dietary complex also plays an essential rôle.

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[3] Niles, G. M.: Reference Handbook of the Medical Sciences **7:** 71, 1917.

[4] Goldberger, Joseph, quoted by Niles (footnote 3).

[5] MacNeal, W. J.: Am. J. M. Sc. **161:** 469 (April) 1921.

[6] Goldberger, Waring and Willets: Pub. Health Rep. **30:** 3117, 1915.

[7] Goldberger, Joseph; and Wheeler, G. A.: Bull. 120, Hyg. Lab., U. S. P. H. S., 1920.

[8] Goldberger, Joseph; and Tanner, W. F.: Pub. Health Rep. **37:** 462 (March 3) 1922.

In an endeavor to discover the identity of this unknown essential complex they found that dried yeast is very effective in preventing the disease and that lean beef[10] also contains the effective agent, which was designated P-P (pellagra preventive). Further investigation revealed the fact that the P-P factor is associated with that earlier known vitamin "water soluble B," which had been assumed to possess only antineuritic properties. By means of heat, the antineuritic properties of yeast are destroyed, leaving a fraction which is pellagra preventive and apparently identical with Goldberger's P-P factor. The heat resistant pellagra preventing factor has been termed vitamin G.

The foregoing recital would lead one to infer that the conclusions of Goldberger and his associates were derived entirely from experiments on the human pellagrous subject. Such a view would be erroneous, for a perusal of the literature soon convinces one that the main inferences derived were first obtained through experiments on the dog. The dog, as a possible experimental animal for the study of pellagra, first came into prominence through a report which Chittenden and I[11] made concerning the production of a pathologic condition that bore certain resemblances to human pellagra. We ascribed the development of the disease to a deficiency of some essential constituent or constituents, presumably belonging to the group of hitherto unrecognized but essential components of an adequate diet. Five years later Wheeler, Goldberger and Blacklock[12] identified this experimental condition with the spontaneously occurring disease of dogs known as black tongue. Attention was also called to the strikingly similar geographic distribution of the two conditions in the United States, pointing out that black tongue, like pellagra, seems to occur for the most part in the Southern states. Goldberger and Wheeler[13] were able to reproduce in dogs an experimental condition similar, at least, to that which Chittenden and I produced, which Goldberger and Wheeler regarded as experimental pellagra. The symptoms were induced in dogs by a type of diet found to be associated with the occurrence of pellagra and also with a diet that had produced pellagra in the human subject.

Mendel and I[14] continued the investigation which Chittenden and I began and recently published an elaborate report. It is shown here that when butter fat is fed to dogs suffering from the deficiency disease which Chittenden and I described, those animals are quickly restored to a normal condition and may be maintained in health for long periods. Under similar circumstances cod liver oil, known to contain active fat-soluble vitamin A, fails to restore these diseased dogs. Evidently this vitamin is not the potent factor in butter fat. The effective factor in butter fat is apparently quite labile, for the potency is diminished by maintenance in cold storage during a period of from nine to eleven months. The presence of the potent factor in butter fat is associated with the color of the butter. As the color decreases, the potency is diminished. Egg yolk contains the effective factor but is apparently less potent than butter fat. It would appear that there is a direct relationship between the presence of carotenoids in the substances listed and the potent factor. This is supported by the fact that crystallized carotene in relatively small doses is capable of curing the disease condition. These authors also call attention to the possibility that naturally occurring pigmentary substances in foodstuffs may play a rôle in nutritive processes.[15] In connection with the last statement it may be recalled that this was written before it had been shown that carotene is closely allied to, or a possible precursor of, vitamin A.[16]

On the other hand, Goldberger and his associates[10] find that butter and cod liver oil exhibit little potency against black tongue or human pellagra. In black tongue as well as in human pellagra, yeast, yeast extract and fresh lean beef possess preventive powers. They have also extended their studies to include the rat as an animal capable of serving as an experimental subject for the production of pellagra.[17] Attention is also called to a study of the black tongue preventive action of sixteen foodstuffs including maize, whole wheat, wheat germ, cowpea, soy bean, milk, butter, cod liver oil, cottonseed oil, beef muscle, pork liver, canned salmon, egg yolk, canned tomatoes, carrots and rutabaga turnips. Of these substances, liver, salmon and egg yolk are rich in black tongue preventive and are recommended for use in the treatment and prevention of pellagra in man. The other substances may contain small amounts of the effective agent but in general are poor sources, with the exception of wheat germ and beef muscle.

At present there exists a wide discrepancy between the results which Mendel and I reported and those of Goldberger. The former found that butter, carrots and pig's liver were effective agents in the prevention of our experimental condition and that the pathologic symptoms developed in the presence of an apparently adequate supply of compressed yeast. On the other hand, Goldberger and his associates assert that butter and carrots are ineffective but that yeast, pig's liver and lean beef possess preventive powers against black tongue and human pellagra. The suggestion has been made by Goldberger[17] that the two experimental states under discussion may not be identical as had previously been assumed. The variations in experience with the experimental condition are perhaps only an expression of the complexity of the syndrome elicited and may be indicative of a multiple deficiency eliciting manifold symptoms which, although superficially alike in etiology, may be quite distinct and separate. Until further much more critical experimentation is completed, decision must be reserved relative to the identity of the two experimental pathologic states and their relationship to human pellagra. Aykroyd [18] has suggested that the Underhill and Mendel syndrome has its origin in vitamin A deficiency. This comment is hardly pertinent since the pathologic state may be induced when active cod liver oil is present in the diet, a fact which Aykroyd apparently overlooked.

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[9] Goldberger, Joseph; and Tanner, W. F.: Pub. Health Rep. **40**: 54 (Jan. 9) 1925.

[10] Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: Pub. Health Rep. **41**: 297 (Feb. 19) 1926.

[11] Chittenden, R. H., and Underhill, F. P.: Am. J. Physiol. **44**: 13 (Aug.) 1917.

[12] Wheeler, G. A.; Goldberger, Joseph; and Blacklock, M. R.: Pub. Health Rep. **37**: 1063, 1922.

[13] Goldberger, Joseph; and Wheeler, G. A.: Pub. Health Rep. **43**: 172 (Jan. 27) 1928.

[14] Underhill, F. P., and Mendel, L. B.: Am. J. Physiol. **83**: 589 (Jan.) 1928.

[15] Underhill, F. P.: Yale J. Biol. & Med., 1928.

[16] Collison, Dorothy L.; Hume, Eleanor M.; Smedly-Maclean, Ida; and Smith, Hannah H.: The Nature of the Vitamin A Constituent of Green Leaves, Biochem. J. **23**: 634, 1929. Moore, T.: Vitamin A and Carotene: Association of Vitamin A Activity with Carotene in Carrot Root, ibid. **23**: 803, 1929.

[17] Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: Pub. Health Rep. **41**: 1385 (Feb. 19) 1926.

An examination of Goldberger's experimental results leads to the conception that in his human subjects the outstanding symptoms were sore mouth and a dermatitis involving a restricted area, the scrotum; with the dog suffering from black tongue, the prominent features were sore mouth and dermatitis of the scrotum; and with the rat a symmetrical dermatitis and loss of hair, gastro-intestinal symptoms being less pronounced. In none of the different types of experimental subjects was there significant evidence of the involvement of the central nervous system—evidences of cord degeneration, for example. The importance of cord degeneration in the syndrome has perhaps been underemphasized. It certainly has been recognized as contributing to the many sided syndrome of pellagra, but its significance has not been fully appreciated. Vedder [19] has suggested that the skin lesions which are so characteristic of pellagra may be referable to changes in the cord. He asks, "Otherwise, how can we explain the marvelous symmetry that is practically the constant characteristic of this symptom?" Mellanby inclines to the view that pellagra may be the outcome of a double deficiency, the absence of vitamin G being responsible for the skin changes and a deficiency of vitamin A or carotene allowing nerve degeneration to develop. In the experimental animals of Mellanby, degeneration of the cord occurred in the presence of yeast and other sources of vitamin G. He was unable to induce degenerative changes in the cord by feeding yellow maize and indicates that this failure may be due to the fact that yellow maize contains carotene.

In pernicious anemia, cord degeneration also occurs. The blood changes in this condition are not cured by the fat soluble portion of the liver.[20] On the other hand, Ungley and Suzman [21] assert that the nerve symptoms of pernicious anemia can be greatly improved by feeding whole liver. The possible interrelationship in the etiology of pernicious anemia and pellagra thus becomes manifest. To befog the clarity of this issue comes the recent pronouncement of Goldberger and Sebrell [22] to the effect that Minot's liver extract has a very definite delaying effect on the occurrence of symptoms in dogs on a black-tongue producing diet and that, when fed to dogs in an attack of black tongue, it has a very definite curative influence. "In view of the evidence herein presented, it seems that Minot's liver extract is a fairly good source of the antipellagric vitamin, and given in larger quantity would be of value as a temporary expedient in the treatment of pellagra." It must be pointed out, however, that in all probability the agent in liver extract responsible for the curative action of the blood picture of pernicious anemia is not identical with vitamin G, for it has been indicated that the antipellagric vitamin is not responsible for the effectiveness of liver in pernicious anemia.[23]

It would appear from this review that the allocation of vitamin G as the sole factor in pellagra is not well established and that too much reliance should not be placed on this agent in the prophylaxis and treatment of pellagra. A period of more than five years has now elapsed since the promulgation of Goldberger as to the effectiveness of the antipellagric vitamin. From a large experience with the disease, Turner [24] has recently reviewed the situation in the following words:

> The spectacular success of certain specific remedies for parasitic diseases such as malaria inspired physicians to hope that specific remedies would follow naturally in the wake of discovery of specific etiology. Pessimism has long ago succeeded such rosy optimism. However, in the field of the deficiency diseases the old optimism largely holds. There is an assumption in the minds of many that the administration of adequate specific vitamin must be followed by prompt clinical cure of the particular deficiency disease. Certainly the results of therapy in scurvy and rickets give some justification for this faith. However, there is a growing realization that disease in humans is rarely due to one factor, as it often appears to be in experimental animals. Castle and his associates have brought forth most convincing evidence of the importance of factors peculiar to the patients' own physiology on the pathogenesis of pernicious anemia, which might with reason be called a deficiency disease.
>
> It is now five years since Goldberger and his colleagues announced their studies on the value of factor P-P (now called vitamin G or B_2) in preventing the relapse of cutaneous pellagra in a group of patients in the Milledgeville Hospital. These results have been accepted widely as establishing the identity of pellagra with certain syndromes produced in experimental animals, and as final proof that factor P-P is the cause of pellagra. During these years those of us who see pellagra frequently have seen a large percentage of patients either die or go into chronic illness [25] in spite of what appeared to be ample opportunity for vitamin therapy to have been effective. The rather poor showing of vitamin therapy in pellagra may be used either as argument against the specificity of vitamin G or it may be interpreted as indicating that changes have taken place due to pellagra or some other disease or constitutional state which makes the vitamin ineffective.

In all fairness to the concept of Goldberger as to the effectiveness of vitamin G in experimental black tongue or pellagra, it should be pointed out that the real significance of vitamin G is more likely to be accurately evaluated under his controlled conditions than is possible in clinical practice, in which all types and particularly all stages of the disease are encountered. It is hardly possible to expect that, when structural damage has proceeded to certain limits, vitamin G, or for that matter any therapeutic measure, is likely to restore structures injured and, consequently, the patient to normal physiologic rhythm. From my own experience on dogs with the so-called pellagrous condition resulting from a deficient diet, the fact has stood out clearly that it is much easier to prevent the appearance of symptoms than to cause them to disappear. On the other hand, at certain early stages of the disease the symptoms may be made to disappear by proper change in diet, and, so far as one may judge, the animal is restored to normality, which is maintained indefinitely so long as the nutrition is adequate. If, however, the disease is allowed to progress to stages beyond those mentioned, all efforts to restore the animal to health are useless and it invariably goes on to death.

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[18] Aykroyd, W. R.: Brit. M. J. **1**: 647 (April 5) 1930.

[19] Vedder, E. B.: Dietary Deficiency as the Etiological Factor in Pellagra, Arch. Int. Med. **18**: 137 (Aug.) 1916.

[20] Mellanby, Edward: Diseases Produced and Prevented by Certain Food Constituents, J. A. M. A. **96**: 325 (Jan. 31) 1931; Brit. M. J. **1**: 677 (April 12) 1930.

[21] Ungley, C. C., and Suzman, M. M.: Brain **52**: 271 (Sept.) 1929.

[22] Goldberger, Joseph; and Sebrell, W. H.: Pub. Health Rep. **45**: 3064 (Dec. 12) 1930.

[23] Cohn, E. J.; Minot, G. R.; Alles, G. A., and Salter, W. T.: J. Biol. Chem. **77**: 325 (May) 1928.

[24] Turner, R. H.: A Physiologic Basis for the Treatment of Pellagra, read before the Section on Pharmacology and Therapeutics, at the Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

[25] More than 30 per cent of certain large groups of hospital patients die. Chronic ill health following an attack is almost the rule.

From the theoretical point of view it would seem that vitamin G, so far as it plays a rôle in the syndrome of pellagra, may be of far more value as a prophylactic measure than as a curative agent.

Turner is quite aware of the influence of possible structural change on curative possibilities, as attested by his statement which follows:

> That extensive alimentary tract damage may occur in pellagra is well known, its extent and severity are extremely variable and have been inadequately studied by clinician and pathologist. It seems, then, probable that many of the therapeutic difficulties encountered in pellagra may be due to the existence of a vicious circle; malnutrition promoting alimentary tract damage and alimentary tract damage in turn interfering with nutrition. This concept would put chief emphasis for prognosis and therapy on the state of the alimentary tract. The evidence that alimentary tract damage predisposes to pellagra has been recently reviewed by Eusterman and O'Leary.[26]

The last mentioned authors consider that pellagra may be secondary to obstructing benign lesions or dysfunction of the upper part of the digestive tract. In these cases of interference with proper alimentation it is possible that parenteral administration of vitamins may be advisable when suitable preparations become available.

Bender[27] and Nuzum[28] have reported secondary pellagra under somewhat similar conditions, the only apparent cause being the interference in alimentation.

Just as pellagra may be induced by diminished food intake because of disease, so may it appear by voluntary restriction of diet. Pellagra is usually associated with the poorer classes of society in which, for economic reasons, adequate food supply is difficult to obtain. There is, however, abundant evidence that the symptoms of the disease may be manifested among individuals whose economic status includes them in the class of the wealthy. Roberts[29] has presented detailed records of twenty-five patients developing pellagra whose tables contained an abundance of well balanced food. Roberts shows that not one of these patients ate a well rounded diet of meat, milk, eggs or wholesome vegetables. He notes that the leanness of most of the patients was striking and remarks that fat people rarely become pellagrous. In this series of cases Roberts shows that his patients had the best food and that they fell into two groups: (*a*) One class ate an unbalanced diet; (*b*) the other ate not only an unbalanced but a "skimpy" starvation diet. These patients were undernourished. As soon as they were placed on a diet which they had formerly refused for psychic or imaginary reasons, they ate it continuously, improved and led active lives. "There is apparently among the better classes a small proportion who have a natural or acquired antipathy to a well rounded, balanced diet. Is there a dietary hysteria? Some persons pride themselves on never getting hungry. Grief, monotony, disease, domestic worries, the preparation of food, constipation are agents in depriving women more than men of their appetites. In this series there were only four men and twenty-one women." Tanner and Echols[30] have also called attention to similar cases.[28] Carley[31] reports a case of pellagra in a woman who, because of fear of cancer, voluntarily eliminated various articles of food until little else than cereals was being ingested.

That alcoholism may contribute its share in the onset of pellagra has been demonstrated by Klauder and Winkleman.[32] In these patients the history uniformly concerned alcoholism of years' duration, with symptoms of pellagra appearing after a debauch lasting for weeks, and often months, during which time incredible amounts of alcohol were consumed daily and little or no food eaten, or, at most, only one type of food.

Dietary restriction instituted to combat some other disease may in itself give rise to symptoms characteristic of pellagra. This is well illustrated in the treatment of epilepsy by the administration of a ketogenic diet. Guthrie[33] and Greer[34] have described cases of such nature, the symptoms disappearing on resumption of a more complete diet.

Finally, in this period of financial depression with the establishment of "bread lines" in many of the larger cities, pellagra may be expected to be encountered with increasing frequency unless measures are taken to provide against possible vitamin deficiencies in the food that is passed out.

That such a situation is already existent is attested by Dr. DuBois[35] in the following words:

> Three or four years ago in Bellevue we began to notice in the medical wards a few patients with symptoms of mild pellagra. These consisted in a beefy red tongue, persistent diarrhea and a roughness of the backs of the hands with a dark discoloration. This was not very marked and some of the dermatologists when they saw the skin lesions called them pseudopellagra, whatever that might be. Three years ago the only patients who presented this symptom complex were the lowest type of alcoholics who go for months living on bad whisky, coffee and doughnuts. At that time Dr. Feigin, who had charge of the alcoholic ward at Bellevue, told me that he was seeing many cases of mild pellagra.
>
> Last year we continued to find in our wards about the same number of alcoholics with mild pellagra but in addition we encountered a half a dozen or so cases which occurred in men who were not alcoholic, as far as we could judge from their histories and physical examination. Practically all, probably all of these mild pellagrins gave the story of many months without work, bread lines, cheap lodging houses. As far as I could tell, the food given out in the bread lines was deficient in calories and vitamins and second helpings were obtainable only if one waited a second period of three or four hours in the line.

333 Cedar Street.

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[26] Eusterman, G. B., and O'Leary, P. A.: Pellagra Secondary to Benign and Carcinomatous Lesions and Dysfunction of the Gastro-Intestinal Tract, Arch. Int. Med. **47**: 633 (April) 1931.

[27] Bender, W. L.: Pellagra Secondary to Lesions of the Stomach Interfering with Nutrition, J. A. M. A. **84**: 1250 (April 25) 1925.

[28] Nuzum, F. R.: Pellagra Associated with Annular Carcinoma of the Terminal Portion of the Ileum, J. A. M. A. **85**: 1861 (Dec. 12) 1925.

[29] Roberts, S. R.: Types and Treatment of Pellagra, J. A. M. A. **75**: 21 (July 3) 1920.

[30] Tanner, W. F., and Echols, G. L.: The Occurrence of Pellagra in Patients Apparently Receiving an Ample Diet, J. A. M. A. **76**: 1337 (May 14) 1921.

[31] Carley, P. S.: A Case of Pellagra Following Voluntary Reduction of Diet, J. A. M. A. **91**: 879 (Sept. 22) 1928.

[32] Klauder, J. V., and Winkleman, N. W.: Pellagra Among Chronic Alcoholic Addicts, J. A. M. A. **90**: 364 (Feb. 4) 1928.

[33] Guthrie, R. H.: Pellagra-Like Skin Lesions Appearing in the Course of a Ketogenic Diet, J. A. M. A. **95**: 1912 (Dec. 20) 1930.

[34] Greer, A. E.: Pellagra-Like Skin Lesions Due to the Ketogenic Diet, J. A. M. A. **95**: 863 (Sept. 20) 1930.

[35] DuBois: Personal communication to the author.

Council on Physical Therapy

The Council on Physical Therapy of the American Medical Association has authorized publication of the following article.
H. A. Carter, Secretary.

ULTRAVIOLET RADIATION USEFUL FOR THERAPEUTIC PURPOSES

SPECIFICATION OF MINIMUM INTENSITY OR RADIANT FLUX: SECOND COMMUNICATION

W. W. COBLENTZ, Ph.D., D.Sc.
WASHINGTON, D. C.

Recently I[1] published the results of a survey of the question of the minimum intensity of ultraviolet radiation acceptable for therapeutic purposes.

Based on six major lines of evidence, I arrived at the conclusion that, in order to insure effective therapeutic results, the intensity (radiant flux density) from sources of heterogeneous ultraviolet radiation, of wavelengths less than and including 313 millimicrons, evaluated according to the spectral erythemic response curve, should not be less than the erythemogenic equivalent of 20 microwatts (200 ergs per second) per square centimeter of homogeneous radiation of the wavelength, of maximum erythemogenic effectiveness, which wavelength, for practical purposes, is taken at the emission line of mercury vapor, at 297 millimicrons (more exactly, 2,967 angstroms).

Using homogeneous radiation of wavelength 297 millimicrons, it may perhaps be possible to cure rickets by exposure to intensities that are lower than 20 microwatts per square centimeter, provided the treatment is sufficiently prolonged. However, such a source is not in common use and, hence, need not be considered.

Although there appears to be no close relationship between the spectral erythemic response and the spectral activation curve of ergosterol in the production of Vitamin D and in the healing of rickets, the erythemal reaction is taken as a criterion for judging the effectiveness of the lamp, for three reasons: (*a*) It is practically the only physiologic reaction that is established with a relatively high degree of accuracy;[2] (*b*) in the case of exposure to intense sources of ultraviolet radiation, it is a simple and practical means of preventing severe burns, and (*c*) in the case of weak sources of ultraviolet radiation, it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation.

Furthermore, the preliminary erythema test will no doubt always be made on new subjects, even after the lamp has been standardized by some form of dosage intensity meter. Hence, it seems natural to use the erythemal instead of the antirachitic or a photochemical action (the production of vitamin D) as a basis of standardization.

It is to be noted that the specification of a minimum of 20 microwatts per square centimeter is an erythemogenic dosage intensity that appears to meet the average conditions as known today; serving, as already stated, as a guide in avoiding burns from overexposure to intense sources of ultraviolet radiation, and eliminating possible fraud in the sale of lamps that do not emit ultraviolet radiation in sufficient intensity to qualify as efficient therapeutic agents. As mentioned in the preceding paper, the ultraviolet radiant flux emitted by the present day "professional models" of the various kinds of therapeutic lamps greatly exceed this specified minimum value.

It is hardly to be expected that this specification will meet all emergencies without supplemental information. For example, suppose that a lamp should be developed, consisting of a high voltage (with condenser) discharge between two electrodes of magnesium, in which most of the ultraviolet radiation is emitted in a single, intense line at about 280 millimicrons. Such a source is well known to physicists.

The emission line of magnesium at 280 millimicrons is in the region of a strong absorption band in ergosterol, which substance has a powerful antirachitic action after exposure to ultraviolet radiation. No data are at hand showing what photochemical action this single emission line would have on the human skin; but it is interesting to note that, because of the low susceptibility of the skin in this spectral region, the erythemal reaction[2] would be relatively weak. On this basis it would therefore appear to be possible to apply a more powerful irradiation from such a lamp without producing a burn than with lamps now in use. Whether such a procedure is desirable is undetermined, though it might be useful in researches on inanimate material. Such sources are now available in the form of cored carbon arcs, which, however, are not so nearly homogeneous in ultraviolet radiation.

A recently introduced source of ultraviolet radiation that requires further physiologic tests is the so-called cold quartz lamp, in which about 95 per cent of the total radiation of wavelengths less than and including 313 millimicrons is emitted in the resonance line of mercury at 254 millimicrons (more exactly, 2,537 angstroms[3]).

The ultraviolet radiant flux,[3] as well as the erythemogenic efficiency of such a lamp is relatively high. Nevertheless, in spite of its high erythemogenic efficiency, further biologic information is needed concerning its effectiveness in healing rickets and in the activation of ergosterol; for, according to published records,[4] when the source of ultraviolet consists of wavelengths longer than 2,750 angstroms, over 60 per cent of ergosterol is converted into vitamin D, whereas, if the lines at 2,537 and 2,654 angstroms are present, only a small amount of ergosterol is converted into vitamin D, after which a further exposure gradually destroys the vitamin D that was formed on first exposure.

As stated in a previous paper,[3] since the publication[4] of experiments on irradiation of cod liver oil, ergosterol and cholesterol, showing that wavelengths shorter than 280 millimicrons are destructive to vitamin D, the feeling is abroad that it is undesirable to use ultraviolet rays of wavelengths shorter than about 280 millimicrons for therapeutic purposes, especially in lamps sold for home use.

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[1] Coblentz, W. W.: Ultraviolet Radiation Useful for Therapeutic Purposes, J. A. M. A. **98:** 1082 (March 26) 1932.

[2] Coblentz, W. W.; Stair, R., and Hogue, J. M.: Bur. Stds. J. Research **8:** 541 (April) 1932.

[3] Coblentz, W. W.: Sources of Radiation and Their Physical Characteristics, J. A. M. A. **97:** 1965-1967 (Dec. 26) 1931.

[4] Reerink, E. H., and Van Wijk, A.: Production of Vitamin D, Biochem. J. **23:** 1294, 1929. Heilbron, I. M.; Kamm, E. D., and Morton, R. A.: Ibid. **21:** 78, 1927; J. Chem. Soc. London **268:** 2000, 1927. Bills, C. E.; Honeywell, E. M., and Cox, W. M., Jr.: J. Biol. Chem. **80:** 557 (Dec.) 1928. Wyman, E. T.; Holmes, A. D.; Smith, L. W.; Stockbarger, D. C., and Pigott, Madeleine G.: Does the Irradiation of Cod Liver Oil Increase Its Antirachitic Potency?" Am. J. Dis. Child. **34:** 753 (Nov.) 1927. Maughan, G. H.: Am. J. Physiol. **87:** 381 (Dec.) 1928.

THE ERYTHEMOGENIC UNIT OF DOSAGE

The ultraviolet unit of dosage cannot be a concise, tangible specification like a quinine pill. Rather, in a broad sense, the aforementioned specification of 20 microwatts per square centimeter of homogeneous radiation, of the wavelength 297 millimicrons, is analogous to a 1 grain (0.065 Gm.) pill of pure quinine sulphate; and the equivalents of heterogeneous ultraviolet radiation, from various sources, are vaguely analogous to the equivalents that would be specified if, instead of pure quinine sulphate, the material were administered in the form of cinchona bark, or quinine derivatives, of various degrees of purity or concentration.

This analogy is not complete, but it should convey the idea of the difficulties encountered in attempting to standardize ultraviolet dosimetry. For example, the physiologic effect of the pure quinine may perhaps be different from that of cinchona bark. Similarly, the physiologic effect of the homogeneous emission line (297 millimicrons) may be somewhat different from that of the heterogeneous source of ultraviolet radiation. Indeed, differences in the color of the erythema and in the amount of pigmentation produced by different sources are recognized.

However, some sort of standardization is needed in order that workers can compare their results. At present, only in a very general way are experimental results comparable. For example, one worker uses a cadmium photocell standard; others use foot candle, or fluorescent photometer standards; and still others use the mercury lamp as a "high sun standard," with no certainty of constancy of the source.

The unit of dosage of ultraviolet radiation has been discussed by various writers, including myself.[5] The various proponents have dealt with this question from two points of view; viz., the specification of the unit in terms (*a*) of radiant power in microwatts per square centimeter, and (*b*) of total energy in ergs per square centimeter. In my previous paper,[1] the ultraviolet unit of dosage was defined in terms of radiant power and, as used, was merely a symbol or an abbreviation to summarize a complex of several variables that enter into the administration of ultraviolet radiation.

In the present communication the unit of dosage is specified in terms of the total ultraviolet energy utilized. When followed through to its logical conclusion, the utilization of the total radiant energy, homogeneous radiation of wavelength 297 millimicrons being employed as a standard, appears to be the simplest, the most direct and the most easily reproducible procedure yet tried experimentally.

This specification is based on the results of an extensive investigation[6] in which a comparison was made of the erythema produced by measured amounts of heterogeneous ultraviolet radiation, evaluated by a balanced thermocouple and filter radiometer. In this evaluation, the erythema produced by a measured amount of homogeneous radiation of wavelength 297 millimicrons was used as a standard. In spite of the fact that the sources differed very markedly in ultraviolet spectral energy distribution, a close agreement was obtained between the observed and the calculated exposures, indicating that the radiometric evaluation is reliable. Since such a radiometer is nonselective and can be calibrated in absolute units, it appears to be the most reliable primary standard of comparison we have yet tested.[6]

The following specification, using total energy, instead of radiant power, is merely an amplification of my earlier suggestions[5] of using erythemogenic equivalents, which could not be specific at that time because of the lack of rigidly controlled physical and physiologic (erythemal) measurements, now available.[6] The present specification appears to meet all the requirements that can be foreseen at present. If it does not greatly simplify the manner of recording the experimental data, it will at least introduce a reproducible system that will bring some order out of the present chaos.

In my previous paper[1] (numerical data revised, herewith) it was shown that, for the various sources of heterogeneous ultraviolet radiation of wavelengths less than and including 3,130 angstroms, the erythemogenic equivalent of 20 microwatts per square centimeter of homogeneous radiation of wavelength 2,967 angstroms, in microwatts per square centimeter, is approximately as follows: the sun at midday, midsummer, midlatitude, sea level (20 ÷ 0.22 =) 91; the Mazda S-1 lamp, 80; the Mazda S-2 lamp, 93; the high temperature quartz mercury arc, 58; the so-called cold quartz mercury vapor lamp, 36; the carbon arc, 45 to 90 (the latter value is estimated; depending on the electric current, the kind of carbons, and windows), and the Mazda CX tungsten filament lamp 130 (estimated).

Furthermore, in the preceding paper[1] it was shown that it requires about 200,000 ergs per square centimeter of homogeneous radiation, of the wavelength of maximum erythemogenic effectiveness, to produce a minimum perceptible erythema on the average untanned skin. The unit of dosage should therefore be some lower value in order to guard against overexposure.

If we adopt 10,000 ergs (10 kiloergs) per square centimeter of homogeneous radiation of the wavelength 297 millimicrons as the erythemogenic unit of dosage of ultraviolet radiation and call it the Finsen unit (F. U.), then the erythemogenic equivalent dosage of heterogeneous ultraviolet radiation, of wavelengths less than and including 313 millimicrons, emitted by the various aforementioned sources is as follows:

1 F. U. = 10,000 ergs per square centimeter of standard wavelength, 297 millimicron, radiation.
= 45,500 ergs per square centimeter of midday, midlatitude, midsummer, sea level, solar radiation.
= 40,000 ergs per square centimeter of Mazda S-1 lamp radiation.
= 46,500 ergs per square centimeter of Mazda S-2 lamp radiation.
= 29,000 ergs per square centimeter of quartz mercury arc radiation.
= 18,000 ergs per square centimeter of "cold quartz" radiation.
= 22,500 to 45,000 ergs per square centimeter of carbon arc radiation. (The latter value is estimated, depending on the kind of carbon and on the window.)

From the foregoing correlation of the physiologic and the radiometric measurements it will be evident why much of the published data, now available, appears to be inconsistent and may be misleading. The published measurements do not include a factor that equates the erythemal response. For example, some time ago I was called on to explain why the short wavelength ultraviolet solar radiation, which was relatively large in amount as measured with a photoelectric cell, did not produce an erythema in a much shorter time than a much smaller amount of ultraviolet radiation emitted by a quartz mercury arc lamp. If the experimenter had multiplied the total ultraviolet radiation measurements by the erythemogenic efficiencies of these two sources (not available then; also by a factor for selectivity of his photocell), he would have found a closer agreement in their erythemal effects.

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[5] Coblentz, W. W.: Instruments for Measuring Ultraviolet Radiation and the Unit of Dosage, M. J. & Rec. **130**: 691 (Dec. 18) 1929.

[6] Coblentz, W. W.; Stair, R., and Hogue, J. M.: Tests of a Balanced Thermocouple and Filter Radiometer as a Standard Ultraviolet Dosage Intensity Meter, Bur. Stds. J. Research **8**: 759 (June) 1932. (R. P. No. 450, 10 cents; obtainable only from the Superintendent of Documents, Washington, D. C.)

For, as mentioned in a recently published paper,[6] when the factor that equates the physiologic (erythemal) response is taken into consideration there is good agreement between the calculated and the observed times of exposure to produce a minimum perceptible erythema, employing sources differing widely in spectral quality and in total intensity of ultraviolet radiation useful for therapeutic purposes.

CONCLUSION

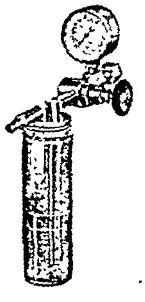
As an illustration of the practical application of the Finsen unit, let us suppose that, from practical experience, it is found that the average person can be given 20 Finsen units daily of Mazda S-2 irradiation without producing an overexposure, and that the particular Mazda S-2 lamp available for use emits a radiant flux of 100 microwatts per square centimeter (1,000 ergs per second) at the standard operating distance. Then, from the described correlations, it follows that 20 Finsen units (46,500 × 20) = 930,000 ergs per square centimeter of Mazda S-2 lamp radiation and hence that an exposure of (930,000 ÷ 1,000 =) 930 seconds, or 15½ minutes daily, is required to produce a minimum perceptible erythema.

If it requires 100 exposures to effect a cure, this will amount to a total of 2,000 Finsen units of Mazda S-2 lamp radiation. This seems simpler than to report the total energy in ergs, which in this instance would amount to 93,000,000 ergs per square centimeter of Mazda S-2 lamp radiation.

2737 Macomb Street, N.W.

GUEDEL OXYGEN METER ACCEPTABLE

The Guedel Oxygen Meter, manufactured by the Foregger Company, Inc., New York City, is designed to indicate visibly the volume of oxygen flowing into a therapeutic oxygen tent. According to the firm, the Guedel Oxygen Meter consists of a control valve to reduce and regulate the pressure of the oxygen from a supply cylinder and a sight-feed to indicate the amount of oxygen fed to a patient within a tent or therapeutic gas chamber. A control valve is provided with a standard pressure gage designed to indicate the pressure in the oxygen tank. The sight-feed is essentially a wash bottle containing a metal gas tube with five holes submerged below the water level. Each hole is calibrated, according to the firm, to permit the passage of 2 liters of oxygen per minute, making a total of 10 liters per minute maximum. The firm claims that this meter is reliable and that the exact amount of oxygen flowing may be read within an error of considerably less than 2 liters per minute within the range of 10 liters per minute.



Guedel Oxygen Meter.

The Council on Physical Therapy declares the Guedel Oxygen Meter acceptable for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

COMPARATIVE STUDIES OF MERCUROCHROME-220 SOLUBLE AND OTHER ANTISEPTICS

The Council has authorized publication of the appended report, "Comparative Studies on Mercurochrome and Other Antiseptics," by W. F. von Oettingen, O. V. Calhoun, V. A. Badertscher and R. E. Pickett. In authorizing publication of this report the Council directed that it be explained that Hynson, Westcott & Dunning have agreed to revise their advertising claims in accordance with the findings of the paper. The Council voted to continue the acceptance of Mercurochrome-220 Soluble, and the description of the product appears in New and Nonofficial Remedies, 1932.

W. A. PUCKNER, Secretary.

COMPARATIVE STUDIES ON MERCUROCHROME AND OTHER ANTISEPTICS

W. F. VON OETTINGEN, M.D., PH.D.
WITH THE ASSISTANCE OF
O. V. CALHOUN, B.S.
V. A. BADERTSCHER, B.S.
AND
R. E. PICKETT, B.S.
CLEVELAND

The manufacturers of mercurochrome-220 soluble[1] (Hynson, Westcott & Dunning), in their advertisements, made claims which seemed inherently questionable; namely, the deep penetration of the drug and at the same time persistent stain of the surface of the skin. The latter would indicate local fixation rather than deep and ready penetration. On the other hand, they claimed a persistent local antiseptic action, attributed to the local fixation. It appeared puzzling that a dye should be at the same time so firmly fixed, and, therefore, essentially insoluble and nevertheless should have marked antiseptic properties; i. e., be capable of reaction with infective agents. The attention of the manufacturers was called to this apparent contradiction by the Council on Pharmacy and Chemistry. They replied at some length, submitting arguments, and citing data from published and unpublished investigations. The arguments did not appear convincing. The references were consulted in the original text; but in some of these the data were scanty, some of the methods used were uncritical, and some of the results were so dubious, that they were unconvincing. It appeared, therefore, that these claims would require stronger evidence to be tenable, and the subject seemed to be sufficiently important to justify the Council in undertaking an independent investigation. This was assigned to the Department of Pharmacology of the School of Medicine of Western Reserve University, under the direction of Torald Sollmann and W. F. von Oettingen. It was decided to confine the investigation essentially to the claims in question, namely, bacteriostatic action and penetration, but to broaden the conclusions by comparison with other

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From the Department of Pharmacology of Western Reserve University School of Medicine.

This investigation has been made with the assistance of a grant from the Committee on Therapeutic Research, Council on Pharmacy and Chemistry, American Medical Association.

[1] For the sake of brevity, this product is hereafter referred to as "mercurochrome."

antiseptics. The methods were selected to give definite answers pertinent to the questions; but refinements beyond this were avoided, since they would tend to narrow the scope of the inquiry.

ANTISEPTIC EFFICIENCY

Since the culture-efficiency is not directly at issue, it appeared sufficient to cite the relevant data from the literature. It may not be amiss to point out certain sources of error that may be concerned in the discordant results, and especially in transferring conclusions to other conditions, without adequate controls:

1. In testing the antiseptic action of drugs by applying these to the skin or to the mucous membranes, and sponging the treated area with sterile gauze swabs, and streaking these on sterile culture mediums, enough antiseptic may be transferred to produce bacteriostatic action. The absence of the transfer of effective quantities of the drug should be confirmed by inoculating the cultures with fresh test organisms. The self-defense mechanism of the host may also develop sufficient antiseptic action, as recently pointed out by Arnold and his co-workers,[2] so that treated and untreated areas must be compared. Norton and Novy[2] failed to demonstrate this effect. Presumably it varies in degree and importance.

2. Certain physicochemical conditions must be observed in testing the antiseptic properties. The work of Michaelis and Dernby[3] on hydrocupreines, of Laqueur, Sluyters and Wolff[4] on acridine dyes, of Hiller and Stamler,[5] of Davis,[6] and of Todd[7] on mercurochrome itself, indicates that the antiseptic action may vary considerably with the p_H of the solutions. The presence of serum and proteins also may affect the antiseptic efficiency either favorably or unfavorably, as pointed out by Browning and his co-workers,[8] and by Morgenroth and his school.[9] The solubility of the drug under different conditions, especially with different p_H, is also important (Michaelis and Dernby); so also is its colloidal or crystalloidal state. For many antiseptics, it was found that the number of organisms in contact with the antiseptic, the presence of blood and pus cells and of organs influence markedly the efficiency (Laqueur,[4] Langer,[10] Wells[11]).

Great caution is therefore necessary in transferring results obtained in test-tube experiments; and even animal experiments may give misleading results, for instance, on account of different structure of the tissue, as pointed out by Laqueur[12] for the white mouse in relation to the experiments of Morgenroth with ethyl hydrocupreine (optochin). Morgenroth, Browning and others have emphasized, therefore, that culture experiments afford only general information which must be controlled by the animal experiment, and finally by very critical observations of an adequate number of clinical cases.

The experimental work done on the antiseptic action of mercurochrome may be grouped as studies on the antiseptic action in cultures, on the local antiseptic action in vivo, and on the antiseptic action in vivo with systemic administration. Only the first two groups are of interest for this report.

ANTISEPTIC ACTION OF MERCUROCHROME ON BACTERIAL CULTURES

General Antiseptic Efficiency in Cultures.—From the data collected from the literature it appears that with short exposure (from one to five minutes), concentrations of from 1:100 to 1:5,000 are necessary to kill bacteria; with longer exposure of from fifteen to sixty minutes, concentrations of from 1:5,000 to 1:10,000 are required, and with exposure for from twenty-four to forty-eight hours concentrations of 1:20,000 to 1:40,000 were found to be antiseptic. It also appears that the antiseptic efficiency is increased by an acid reaction. According to Birkhaug,[13] the bactericidal efficiency of mercurochrome is less than that of hexyl resorcinol, mercuric chloride and iodine, but higher than that of phenol. It appears, in this connection, that in wounds and mucous membranes the bactericidal action, the destruction of bacteria, is of greater importance than the bacteriostatic action, the inhibition of bacterial growth, unless the tissue is continuously bathed with the antiseptic in a soluble and active form.

The Effect of p_H on the Antiseptic Action of Mercurochrome.—Young, White and Swartz[14] observed no growth of Staphylococcus aureus in mercurochrome urine mixtures of the p_H 6.4 in concentrations of 1:1,000 after one minute, and of 1:5,000 after five minutes' exposure. Lancaster, Burnett and Gaus[15] saw no growth of the organisms in mercurochrome Ringer solutions of higher p_H in concentrations of 1:1,000, after six to ten minutes, and in such of 1:10,000 after thirty to sixty minutes' exposure; mercurochrome being, therefore, less effective at a higher p_H. Todd[7] similarly found the antiseptic action of mercurochrome for several organisms considerably reduced, near the neutral point, as compared with the more acid solutions. This was confirmed by Hiller and Stamler,[5] who inoculated broth of different p_H (7.5 to 5.3) containing varying concentrations of mercurochrome with B. coli cultures. After forty-eight hours' incubation, one loop of each tube was transferred to endo agar plates, which were read after incubation for twenty-four hours. Under these circumstances, they found that concentrations of 1:5,000 killed the organisms at every p_H. With concentrations of 1:20,000, there were a few colonies at p_H 7.5 to 7.1, and with lower p_H the cultures were negative. Concentrations of 1:40,000 showed luxurious growth in alkaline mediums and no growth in the acid series, except for a peculiar range between p_H 6.3 and 5.9.

Effect of Mercurochrome on Different Organisms.—Birkhaug[13] determined the phenol coefficient of mercurochrome for different organisms as follows: Staphylococcus aureus, 1.7; Streptococcus hemolyticus, 3.0; B. coli, 2.0; gonococcus, 2.2; B. anthracis, 4.6; B. subtilis, 3.7. Simmons[16] found that 2 per cent aqueous solution of mercurochrome failed to kill Staphylococcus aureus in ten minutes or Streptococcus scarlatinae in five minutes; but it killed Streptococcus pyogenes in two and one-half and Escherichia coli in one minute. The favorable results reported by Scott and Hill[17] appear to have been due chiefly to the solvent, judging by the data of their table. According to Simmons, all the mercurochrome solutions failed to kill the spores of B. anthracis in three hours, being in this respect distinctly inferior to tincture of iodine, which killed spores after one hour's contact. However, even this time is probably far too long to have any real therapeutic importance.

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[2] Arnold, Gustafson, Hull, Montgomery and Singer: Am. J. Hyg. **11**: 345 (March) 1930. Norton, J. F., and Novy, M. F.: Am. J. Pub. Health **21**: 1117 (Oct. 1) 1931.

[3] Michaelis, L., and Dernby, K. G.: Ztschr. f. Immunitätsforsch. u. exper. Therap. **34**: 194, 1922.

[4] Laqueur, Sluyters and Wolff: Ztschr. f. d. ges. exper. Med. **42**: 247, 1924.

[5] Hiller, R. I., and Stamler, A. E.: J. Urol. **22**: 699 (Dec.) 1929.

[6] Davis, E. G.: Am. J. M. Sc. **161**: 251 (Feb.) 1921.

[7] Todd, A. T.: Lancet **2**: 1017 (Nov. 14) 1925.

[8] Browning, Cohen, Ellingworth and Gulbranson: Proc. Roy. Soc. London B **105**: 99, 1930.

[9] Morgenroth, J.: Deutsche med. Wchnschr. **45**: 505 (May 8) 1919.

[10] Langer, H.: Ztschr. f. d. ges. exper. Med. **27**: 174, 1922.

[11] Wells, P.: Ztschr. f. d. ges. exper. Med. **28**: 347, 1922.

[12] Laqueur, F.: Ergebn. d. inn. Med. u. Kinderh. **23**: 467, 1923.

[13] Birkhaug, K. E.: Metaphen (4-Nitro-3, 5-Bisacetoxymercuri-2-Cresol), J. A. M. A. **95**: 917 (Sept. 27) 1930.

[14] Young, H. H.; White, E. C., and Swartz, E. O.: A New Germicide for Use in the Genito-Urinary Tract: "Mercurochrome-220," J. A. M. A. **73**: 1483 (Nov. 15) 1919.

[15] Lancaster, W. B.; Burnett, F. L., and Gaus, L. H.: Mercurochrome-220, Clinical and Laboratory Report on Its Use in Ophthalmology, J. A. M. A. **75**: 721 (Sept. 11) 1920.

[16] Simmons, J. S.: Bactericidal Action of Mercurochrome-220 Soluble and Iodine Solutions in Skin Disinfection, J. A. M. A. **91**: 704 (Sept. 8) 1928; J. Infect. Dis. **39**: 273 (Oct.) 1926.

Eyre, Notton and Pope[18] determined the minimal inhibiting concentration of mercurochrome as 1:3,500 for B. coli and as 1:8,000 for Staphylococcus longus-hemolyticus. Swartz and Davis[19] found for gonococci as minimal antiseptic concentration after five minutes 1:4,000, and after twenty minutes' contact 1:16,000. It is not possible to explain why these results are so different from those reported by Birkhaug, who found 1:180 as the highest dilution of mercurochrome that would kill gonococci after ten but not after five minutes.

It appears, therefore, that the bactericidal efficiency of mercurochrome, as of most antiseptics, varies with different organisms.

Effect of Serum and of Blood on the Bactericidal Action of Mercurochrome.—In the presence of 50 per cent serum, Miss Hill[20] found the effective concentration of mercurochrome with one minute's exposure to be for B. coli 1:200, for Staphylococcus aureus 1:90, for B. pyocyaneus 1:90, and for pneumococci 1:50. Lancaster, Burnett and Gaus[15] found the minimal effective concentration in serum as 1:100 in one hour, and as 5:100 in ten minutes in contrast to 1:1,000 in from six to ten minutes, and of 1:10,000 in from thirty to sixty minutes in Ringer solution. In comparing the efficiency in dilutions made with 50 per cent human serum and with distilled water, Birkhaug[13] found the highest effective dilution killing organisms after ten but not after five minutes for Staphylococcus aureus 1:40 and 1:140; for Staphylococcus hemolyticus 1:70 and 1:300; for B. coli 1:30 and 1:60; for gonococci 1:50 and 1:80, and for B. anthracis 1:60 and 1:320. The first of each pair of numbers refers to serum, the second to water dilutions. Hill and Ellis[21] reported experiments on the protection of animals against multiple lethal doses of pneumococci by giving mercurochrome, horse serum alone, and mixtures of mercurochrome and horse serum. The animals treated with the mixture showed a markedly favorable therapeutic response as compared with mice receiving either mercurochrome or horse serum alone. The authors themselves stated that this therapeutic action is not related to direct germicidal action, and it appears to be a nonspecific reaction.

From these data it appears that the presence of serum does greatly reduce the antiseptic action of mercurochrome.

Young, White and Swartz[14] compared the antiseptic action of mercurochrome in urine (p_H 6.4) with that in hydrocele fluid. They found that in the urine mixture B. coli and Staphylococcus aureus were killed by concentrations of 1:1,000 in five minutes, and in the hydrocele fluid only after sixty minutes' contact. In defibrinated blood, Piper[22] found that mercurochrome inhibited the growth of Staphylococcus hemolyticus completely in concentrations of 1:8,000 in forty minutes, and with 1:6,000 only two colonies were counted at the end of one hour. Since the number of experiments was apparently limited and no details of the technic were given, they need further confirmation. Simmons[16] found that mercurochrome in aqueous solution of 1:100 killed staphylococci in fifteen minutes, but not when blood was added to the mixtures. J. E. Walker[23] found that mercurochrome in concentrations of from 1:25,600 to 1:400 has no appreciable effect on the bactericidal action of fresh defibrinated blood for B. coli, 1:100 sterilized the blood for staphylococci and 1:200 for streptococci. Brill and Myers[24] found that mercurochrome in blood culture mediums had no antiseptic value, even after twenty-four hours' contact in concentrations of 1:10,000, as tested with Streptococcus viridans, Staphylococcus albus and B. coli.

Hench, Snell and Greene[25] state that, in bile, mercurochrome is bactericidal in a concentration of 1:20,000. Hill and Scott,[26] using the Beckwith method, found that mercurochrome bile mixtures of 1:1,000 killed all bacteria tested except Staphylococcus aureus, within one hour, in the same time concentrations of 1:50,000 killed B. typhosus 3, the experiments being controlled with pure bile. Comparison of these figures with those obtained by Young and his co-workers indicates that the presence of bile has a distinct inhibiting action on the antiseptic action of mercurochrome. This was confirmed by Simmons,[16] who found that aqueous mercurochrome solutions of 1:5,000 killed typhoid bacilli in five minutes, whereas, with the same concentration in ox bile, thirty minutes' contact was necessary to kill the organisms.

THE LOCAL BACTERIOSTATIC ACTION OF MERCUROCHROME

The local bacteriostatic action of mercurochrome has been studied in several ways. Tinker and Sutton[27] reported that a 5 per cent solution of mercurochrome in 50 per cent alcohol failed to kill most of the resistant and some of the less resistant pathogenic bacteria when applied to the skin. Scott and Hill[17] pointed out that, although aqueous solutions of 1 to 10 per cent are bactericidal against certain organisms in vitro, such solutions are generally less effective in disinfecting the skin. Later they[28] found that a 2 per cent acetone-alcohol-aqueous solution gave better results. This was confirmed by Simmons,[16] who reported that 5 per cent alcoholic (50 per cent) solutions gave somewhat better results than the aqueous solutions but was less effective than alcoholic solutions of iodine (3.5 per cent) in killing certain spore forming bacteria. This was substantiated by Reddish (quoted from Simmons). However, none of the agents are absolutely effective, and there may be some doubt as to the significance of these differences. Simmons found in disinfection experiments with normal rabbit skin that mercurochrome had less bactericidal action on Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, B. coli and Claustridium welchii than had iodine solution. A 2 per cent mercurochrome solution failed to kill the organism either on or in the skin in fifty-five out of fifty-six experiments; 2 per cent acetone-alcohol-aqueous solution caused some reduction of the organisms but failed to disinfect the skin in forty-five out of fifty experiments. The 5 per cent alcoholic (50 per cent) solution reduced the number of bacteria in a similar way but failed to disinfect in forty-five out of forty-six experiments. The 2 per cent acetone-alcohol-aqueous solution failed to kill or to lower the virulence of B. anthracis spores, whereas tincture of iodine was effective. Reddish and Drake[29] reported similar studies, which led them to believe that as a skin disinfectant the 2 per cent acetone-alcohol-aqueous solution of mercurochrome is as effective as iodine, the 2 per cent aqueous solution being less effective. Bloomfield[30] painted areas of the tongue with 10 per cent aqueous solutions of mercurochrome. Swabs taken ten minutes later and cultures showed a profuse growth of green streptococci. Rodriguez[31] studied the antiseptic action of mercurochrome on the mucous membranes of the mouth. He found that rinsing of the mouth with 2 per cent mercurochrome solution had no effect in ten out of ten cases after one minute contact; after three and five minutes' exposure there was a decided reduction in the number of colonies. The germicidal effect was most marked against gram-negative cocci, less against gram-positive bacilli, and practically nil against gram-positive cocci. The 5 per cent alcoholic solution gave better results; but in only two out of ten cases was the disinfection complete.

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[17] Scott, W. W., and Hill, Justina H.: J. Urol. **14**:135 (Aug.) 1925.

[18] Eyre, I.; Notton, H. E. F., and Pope, W. J.: Brit. M. J. **2**:238 (Aug. 11) 1928.

[19] Swartz, E. O., and Davis, D. M.: *Action of Mercurochrome-220 on* Gonococcus, J. A. M. A. **76**:844 (March 26) 1921.

[20] Hill, Justina H., quoted by Smith, D. T.: Causes and Treatment of Otitis Media, Am. J. Dis. Child. **28**:1 (July) 1924.

[21] Hill, Justina H., and Ellis, M. G.: Bull. Johns Hopkins Hosp. **44**:40 (Jan.) 1929.

[22] Piper, E. B.: Am. J. Obst. & Gynec. **4**:532 (Nov.) 1922.

[23] Walker, J. E.: Arch. Path. & Lab. Med. **1**:199 (Feb.) 1926.

[24] Brill, I. C., and Myers, H. B.: Mercurochrome-220 Soluble and Gentian Violet, J. A. M. A. **84**:879 (March 21) 1925.

[25] Hench, P. S.; Snell, A. M., and Greene, C. H.: J. Pharmacol. & Exper. Therap. **25**:142, 1925.

[26] Hill, J. H., and Scott, W. W.: Mercurochrome-220 Soluble as a Biliary Antiseptic, Arch. Int. Med. **35**:503 (April) 1925.

[27] Tinker, M. B., and Sutton, H. B.: Ann. Surg. **82**:640 (Oct.) 1925; Inefficiency of Most of the Commonly Used Skin Antiseptics, J. A. M. A. **87**:1347 (Oct. 23) 1926.

[28] Scott and Hill (footnote 17). Scott, W. W.; Hill, Justina H., and Ellis, M. G.: Action of Mercurochrome and *Tincture of Iodine in Skin* Disinfection, J. A. M. A. **92**:111 (Jan. 12) 1929.

Mayes and Ullian[32] recently reported experiments on the antiseptic action of mercurochrome in the birth canal. They report that after lavage with 2 per cent aqueous mercurochrome solution, the number of colonies was considerably reduced as compared with untreated cases and with lavage with compound solution of cresol. In a more recent publication, Mayes[33] used mercurochrome in the preparation of the birth canal by spraying a 4 per cent aqueous solution on the perineum and injecting 3 drachms (11 cc.) of a 2 per cent solution into the vagina. He compared the morbidity of patients treated in this way with that of patients treated only externally with iodine. He reports that the percentage of morbidity of the latter group was 12.4 per cent (2,072 cases) as compared with 5.6 per cent in the first group (5,102 cases). From this the conclusion appears justified that the prepartum disinfection of the birth canal with mercurochrome does decrease the incidence of infective responses. However, Mayes has apparently not made comparative observations with other antiseptics applied in the same manner as mercurochrome. An editorial comment[33a] in The Journal states that "other obstetricians, among them Williams at Johns Hopkins and Baldwin at the University of Michigan, failed to obtain any striking results" but that Henderson of Colorado reports a similar reduction of the morbidity. "Although the numbers of this study from the University of Colorado are not large, the care with which the experiment has been controlled gives significance to the result."

The local antiseptic action of mercurochrome on abscesses has been studied by Sanner and Hill.[34] They produced artificially abscesses in guinea-pigs and treated these with 1 and 2 per cent solutions of mercurochrome. They observed a reduction of the number of organisms and a more prompt healing than in the controls. However, their experiments do not seem conclusive, because the controls were not treated in the same way with some inert material, such as physiologic solution of sodium chloride, to eliminate the possibility of having removed the germ mechanically by lavage.

This survey of the literature does not pretend to be exhaustive; but it includes all the original investigations that were cited by the manufacturers in support of their claims for mercurochrome.

Because these data do not give definite evidence of the bacteriostatic action of mercurochrome, additional experiments were carried out in this laboratory:

The skin of patients preparing for an operation was painted with the antiseptic solutions twelve hours, then one hour, and again fifteen minutes prior to the operation, three coats being applied at each treatment and each coat being allowed to dry before the next was applied. The solutions used were 3 per cent alcoholic solution of iodine, an alcoholic solution of mercuric chloride 1:4,000, and 2 per cent acetone-alcohol-aqueous solutions of mercurochrome, gentian violet and hexylresorcinol. The solvent for these dyes consisted of 10 parts of acetone, 52.5 parts of alcohol and 37.5 parts of water, as suggested by Tinker and Sutton.[35]

In this way nine coats were applied to the skin of patients, and no further treatment was given prior to the operation. At this time a specimen of skin was excised, which was delivered the same day with aseptic precautions, and strips of 0.5 by 1 cm. surface were implanted into agar plate cultures of Staphylococcus albus before they were congealed and incubated for twenty-four hours at 37 C. None of five samples treated with mercurochrome, coming from different patients, showed a bacteriostatic halo around the tissue in the culture, thus indicating that the dye was fixed on the surface of the skin and did not develop any bacteriostatic action in contact with the culture. Similarly negative results were also obtained with one sample taken one hour after the administration of three coats. Of the other antiseptics used in these experiments, mercuric chloride and iodine showed marked bacteriostatic action in two out of two cases; gentian violet exhibited in two out of two cases a distinct, and hexylresorcinol in three out of three no bacteriostatic, property.

These experiments with human skin had to be discontinued, because stitch abscesses occurred even after nine coats of the mercurochrome, applied in intervals as described. This is a practical confirmation that mercurochrome has no or only very little bacteriostatic value, whereas mercuric chloride, iodine and, to a less degree, gentian violet show bacteriostatic properties. The manufacturers of mercurochrome claim that the acetone-alcohol-aqueous solution of mercurochrome is more effective on the skin than is the aqueous solution, because it penetrates fat. As has been pointed out, samples of skin painted with nine coats of the alcohol-acetone mercurochrome did not arrest bacterial growth. This does not exclude the possibility that the moist solution may kill some bacteria on the surface, partly by the dye and partly by the solvent itself. Further experiments with mercurochrome were made on the shaved skin of rabbits, to which one coat of 2 per cent aqueous solution of mercurochrome was applied so as to obviate the complication of the disinfectant action of the alcohol-acetone solvent. From this skin one sample was removed immediately after the drying, another after one hour, and a third after four hours; none of these showed a bacteriostatic action when tested as described.

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[29] Reddish, G. F., and Drake, W. E.: Mercurochrome-220 Soluble and U. S. P. Tincture of Iodine, J. A. M. A. **91:** 712 (Sept. 8) 1928.

[30] Bloomfield, A. L.: Bull. Johns Hopkins Hosp. **34:** 65 (Feb.) 1923.

[31] Rodriguez, F. E.: Mercurochrome and Iodine as Disinfectants of Mucous Membrane of Mouth, J. A. M. A. **51:** 708 (Sept. 8) 1928.

[32] Mayes, H. W., and Ullian, S.: Surg., Gynec. & Obst. **51:** 345 (Sept.) 1930.

[33] Mayes, H. W.: Surg., Gynec. & Obst. **54:** 529 (March) 1932.

[33a] Antisepsis During Labor, Current Comment, J. A. M. A. **95:** 667 (Aug. 30) 1930.

[34] Sanner, J. E., and Hill, Justina H.: Surg., Gynec. & Obst. **46:** 496 (April) 1928.

[35] Tinker, M. B., and Sutton, H. B.: Skin Disinfection with Especial Reference to Use of Acriflavine, J. A. M. A. **88:** 1560 (May 17) 1927.

THE PENETRATION OF MERCUROCHROME

Deep penetration of mercurochrome is one of the main claims of the manufacturers. Young, White and Swartz [14] stated that, during intravenous injection into the rabbit ear, the dye spread within a few seconds from the vein into the tissues, so that the whole ear assumed a reddish pink color, which persisted with varying intensity for from twenty-four to forty-eight hours. In order to determine the penetration of mercurochrome into the tissue of the urinary tract, they injected an ounce of a 1 per cent solution into the urinary bladder of a rabbit by means of a catheter. Examination of frozen sections and of paraffin sections of the formaldehyde hardened tissue showed a deep staining of the epithelial layer of the urethra; this was most marked in the superficial layer, less distinct in the mucosa, and in some places even the muscularis was stained. Similar experiments on the staining of the renal pelvis were performed by O'Conor [36] in dogs. He opened the bladder in the median line and injected the solutions of different antiseptics into the pelvis by means of a ureteral catheter. He found that mercurochrome stained the superficial layers and that it was uniformly distributed throughout the submucosa and the muscularis. Examination of serial sections of the kidney twenty minutes after the injection of mercurochrome by gravity reveals that the dye had penetrated the tubules up to the glomeruli. Jones [37] studied the diffusion of 1 per cent solutions of mercurochrome and of other antiseptics into cervical mucus placed in petri dishes and found that the diffusion velocity was most marked with acid fuchsin, followed by mercurochrome, gentian violet, acriflavine hydrochloride, mild silver protein and strong silver protein, in the order given. He also filled solutions of the same strength into empty excised intestines of rabbits and rinsed these afterward with water. He found that acid fuchsin, mercurochrome and acriflavine hydrochloride left deep and permanent staining, which went to the depth of the epithelium. Solutions containing 5 per cent of the dye and 5 per cent of glycerin were injected in quantities of 5 cc. into the vagina of rabbits and allowed to remain there for fifteen minutes. The microscopic examination showed a deep staining of the vagina and of the cervix. From the examination of frozen sections it appeared that the staining was not uniform, decreasing gradually in the higher sections; but in those sections which were stained the dye had penetrated into the muscularis. Todd [7] filled the bladder of one rabbit with 5 per cent solutions of mercurochrome and kept it filled for one hour, when the bladder was emptied. After twenty-four hours, the animal was killed, and it was found that the bladder was deeply stained throughout, and that also the peritoneum surrounding the bladder and the pelvis of the kidney was deeply stained. Sections of the tissue were evidently not made. All other references submitted by the manufacturers as evidence for the penetrating action of mercurochrome contain only statements without experimental data for these claims.

From the foregoing data it appears that the penetrating action of mercurochrome into the tissue has been studied with some care only in the urinary tract, and that studies on the penetrating action into the skin and the muscular tissue are missing. Experiments made to supply these deficiencies also brought to light serious sources of error that inhered in the earlier work:

Penetration of Leather.—Before further experiments were done on the penetrating action into living tissue, a model experiment was performed with leather, which has considerable structural and chemical similarity to dead tissue. For this purpose, pieces 5 mm. thick were chosen, half of which were extracted with ether in order to remove the fat. Both samples were painted with three coats of mercurochrome, or with other agents, as indicated in table 1, each coat being allowed to dry before the next was applied.

Table 1.—*Penetration of Mercurochrome, Gentian Violet and Iodine into Leather*

Antiseptic	Ether Extracted Leather	Untreated Leather
2% aqueous mercurochrome	stained 0.25 mm. deep in regular line	stained 0.25 mm. deep in regular line
2% acetone-alcohol-aqueous mercurochrome	stained 0.25 mm. deep in irregular line	less penetration than in ether extracted sample
U. S. P. tincture of iodine	stained 0.25 to 0.5 mm.; deep penetration, deeper in center	0.5 to 1 mm. deep; stained fairly uniform
aqueous solution of gentian violet 1/500	no penetration	no penetration

This table shows that the depth of penetration is best with iodine; next ranges the acetone-alcohol-aqueous solution of mercurochrome, the aqueous solution of mercurochrome, and last that of gentian violet, the latter showing no penetration. These experiments give a picture of the penetration of these agents into a fibrous colloid system which is actually penetrable and stainable by mercurochrome and somewhat analogous to the physical structure of dead tissues.

Penetration into Living Human Skin.—All samples of human skin that had been treated with nine coats of mercurochrome in 2 per cent acetone-alcohol-aqueous solution, as described previously, were studied histologically. In order to avoid solution of the dye and secondary staining, frozen sections were made of the fresh tissue and examined without contact with any solvents as well as after embedding in glycerin. The latter, however, did not change or dissolve the dye when the slides were examined immediately. It was found that only the most superficial corneous layer was stained. In no instance was a deeper penetration into the skin observed.

The same results were obtained by painting the tongue of dogs with 2 per cent acetone-alcohol solutions and aqueous solutions of mercurochrome, and identical results were found microscopically in sections of rabbit skin.

Penetration into Muscular Tissue.—In order to ascertain whether the dye stains the muscular tissue more readily and deeper than the skin, freshly skinned frog legs were placed in 2 per cent solutions of mercurochrome in water and in the acetone-alcohol-water mixture, and pieces were taken at intervals and studied microscopically. After thirty minutes with the aqueous solution, the muscle showed some staining only on the surface, about 0.5 mm, deep, the depth of the color being more marked on the extreme surface. After one hour the staining zone was about 1 mm. deep, and after eighteen hours the dye had penetrated deeper into the tissue. The intensity of the staining was, however, not uniform, some fibers being deeply stained, others less, and some not at all. The same results were obtained with the acetone-alcohol-aqueous solution, with the only difference that on longer exposure the tissue showed signs of dehydration.

In order to decide the reason why in these experiments the muscle fibers were not stained uniformly, the following experiments were made:

A 1 per cent aqueous solution of mercurochrome was injected into the aorta of a frog until the skin of the leg showed a definite pink color. After the removal of the skin the muscle showed no coloration. The sciatic nerve of one leg was then stimulated with a faradic current. This leg turned more pink than the other one, presumably because the violent contractions caused rupture of some blood vessels. This was confirmed by the microscopic examination of sections in which the staining in the immediate surrounding of the vessels was deeper, gradually losing in intensity.

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[36] O'Conor, V. J.: Lavage of Renal Pelvis, J. A. M. A. **77**: 1088 (Oct. 1) 1921.

[37] Jones, Ray: Northwest Med. **21**: 182 (June) 1922; Urol. Cutan. Rev. **27**: 692, 1923.

The effect of mercurochrome on living muscle was also studied with isolated muscle fibers. Teased preparations of the musculus rectus abdominis and of the musculus gracilis of frogs were used. These were observed under the microscope, their life being tested by stimulation with a faradic current by means of a very fine electrode. It was found that those fibers which did not contract were immediately stained on the addition of 2 per cent aqueous mercurochrome solution; the others, only after the response to electrical stimulation had disappeared.

Similar experiments were performed with living frogs. Small areas of skin and of skin with muscle were snipped out of the leg, and then the animal was immersed in 2 per cent aqueous solution of mercurochrome for one hour. After this period the animal was killed and skinned, and sections were made through the muscular tissue. In every instance only the most superficial muscular layer was stained.

In a second series, wounds were produced by cauterization with a hot iron, and the animals treated as before. In these experiments also only the most superficial layer of the muscle was stained; the scab in the necrotic area was deeply stained, but the normal tissue beneath the scab showed no staining.

Instillation of 2 per cent mercurochrome in aqueous and in acetone-alcohol-aqueous solution into wounds of rabbit ears, made by cutting with a scalpel, by snipping out pieces with scissors, and by punching holes with an awl, gave results identical with those in the frog; that is, the stain was confined entirely to the dead tissue.

From these experiments it appears that mercurochrome does not readily penetrate the living muscle, even when the muscle is perfused with the dye through the vessels. On the other hand, dead or necrotic muscular tissue is deeply stained by the dye. As living muscle is in general much more easily penetrated by reagents than is the skin, its failure to be stained by mercurochrome is a further support of the observation *that the dye does not penetrate into the living layers* of the skin.

Since ophthalmologists have reported marked penetration for mercurochrome, enucleated frog eyes were placed in 2 per cent aqueous and acetone-alcohol-aqueous solutions of mercurochrome for twelve hours. After this period it was found that with both solutions the aqueous humor was stained and with the aqueous solution the lens had also been stained uniformly; with the acetone-alcohol-aqueous solution, however, only the surface, the whole organ being hardened. From this it appears that mercurochrome penetrates the dead cornea of the frog. Experiments with living frogs which were immersed in 2, 5 and 10 per cent aqueous solutions of mercurochrome for periods of from 15 to 120 minutes showed that the dye had penetrated the cornea with the 2 per cent solution after two hours, with the 5 per cent solution after one hour, and with the 10 per cent solution after five minutes. From these data it appears that the living cornea also is permeable to mercurochrome in 2 per cent aqueous mercurochrome solutions when exposed for a sufficient length of time. This may be due to the nature of the cornea, which is more akin to the stratum corneum, to cartilage and to dead leather than to active tissue.

Spreading of the Dye in Subcutaneous Tissue.—In living rabbits, 0.1 cc. of 2 per cent aqueous and of 2 per cent acetone-alcohol-aqueous solutions of mercurochrome, and 0.1 cc. of U. S. P. tincture of iodine were injected into the subcutaneous tissue of the dorsal surface of the ear, between the skin and the cartilage, as far as possible from the main vessels. The diameter of the wheal was measured immediately and after one, two and twenty-four hours, with all three solutions. The immediate diameter of the wheal varied between 9 and 13 mm. and there was no material change within the first two hours. After twenty-four hours, a circumscribed stain could not be recognized but the larger part of the ear was definitely pink. When these ears were amputated under anesthesia and the skin stripped off from the cartilage, about 0.2 cc. of pink fluid was found between the two structures. The skin and the cartilage showed only a slight and superficial staining at the site of the injection, of the original size. Iodine could not be detected, which, however, may be due to the conversion into colorless iodide. Similar experiments performed with intracutaneous injections in rabbits also did not reveal any distinct spreading of the injected material. From these experiments it appears, therefore, that the dye either in aqueous or in acetone-alcohol-aqueous solution does not spread readily when injected into the tissue. The spreading of mercurochrome into the tissue with intravenous injection was studied with 2 per cent aqueous and 2 per cent acetone-alcohol-aqueous solutions. Injection of 0.5 cc. of aqueous solution into the ear vein of rabbits produced staining of the vessels and a slight dilatation of the capillaries and smaller vessels but no general staining or inflammation. Injection of 2 per cent aqueous mercurochrome solutions into the central artery of the rabbit ear caused a staining of the tissue surrounding the artery. This staining was not due to diffusion from the artery but was caused by mechanical spreading of the dye solution from the site of the insertion of the needle during and after the injection. As with hypodermic injections, there was some stained fluid between the cartilage and the skin, and the cartilage itself showed a sharply defined spot corresponding to the stained area of the skin; the sharpness of the outline indicates that the spreading was not due to gradual diffusion into the tissue.

From these experiments it appears that the dye does not readily diffuse from the vein, but when injected into the artery it is distributed over the capillaries and produces uniform staining of the whole ear.

Penetration of Mercurochrome into Mucous Membranes.—The penetration of the dye into the mucous membranes of the urinary tract was studied in five living rabbits. From 10 to 20 cc. of a 2 per cent aqueous solution of mercurochrome was injected slowly into the empty urinary bladder by means of a catheter and kept there for periods of from fifteen minutes to two hours. Then the bladder was emptied and removed from the living animal, under ether or barbital anesthesia. In these experiments, only the most superficial layer of the mucosa was found stained, and frequently the dye could be completely removed with a cotton swab. These results were confirmed by microscopic examination of frozen sections in glycerin. Two other rabbits were killed directly after the injection of the dye into the bladder, and fifteen minutes later the bladder was emptied, removed and studied. Two other animals were killed thirty minutes after the injection and the bladder was removed thirty and sixty minutes later. Under these conditions, that is, in the dead animals, there was a deep staining of the mucosa, submucosa, and also partly of the muscularis. There is therefore a pronounced difference, when the dye is left in the bladder of the dead animals. The penetration of the dye into the walls of the vagina was studied in two living rabbits by injecting 5 cc. of the 2 per cent aqueous mercurochrome solution into the vagina. When emptied and removed, after half an hour, from the living animal, under ether anesthesia, only the mucous and the most superficial layer of the mucosa was found stained. If, however, the animal was killed before the removal of the organ, the mucosa was deeply stained; ten minutes after death, and half an hour later, there was a deep staining of the mucosa, the submucosa and the muscularis.

The penetration of mercurochrome into the mucosa of the intestinal tract was studied in four rabbits and two cats. The animals received from 30 to 50 cc. of 2 per cent aqueous solution of mercurochrome by stomach tube. Loops of intestine were removed under ether anesthesia, one-half to one hour later, in case of the cats after from three to four hours, and examined macroscopically and microscopically. In all instances, only the mucous and the most superficial layer of the epithelium was stained. Similar results were obtained with frogs that were immersed in 2 per cent aqueous solutions of mercurochrome and allowed to swallow some of the solution. In two other rabbits, which were killed prior to the removal, the mucosa showed deep staining ten minutes after death, and after longer periods the muscularis also showed some staining. The dead rabbit intestine, on the other hand, as used in the diffusion experiments described below, showed a deep and uniform staining of all layers.

The penetration of mercurochrome through living frog skin was studied by immersing small living frogs in cylinders containing 2, 5 and 10 per cent aqueous solutions of mercurochrome. With the 2 per cent solution only a slight staining of the inside of the skin could be observed after one and two hours' exposure; with 5 per cent solutions this was more distinct after two hours; and with the 10 per cent solution the staining of the inside was already marked after immersion for fifteen minutes. As will be shown later, a 2 per cent aqueous solution of mercurochrome can hardly be considered as toxic; 5 and 10 per cent solutions, however, show distinct toxic reactions, and therefore the deeper penetration of the dye with longer exposure and more concentrated solutions cannot be considered as a phenomenon of the normal living skin. If mercurochrome penetrates so poorly in the normal frog skin, which is generally a good absorbing surface, it would penetrate less into the human skin, which is markedly less permeable than the frog skin.

From these experiments it appears that 2 per cent aqueous solutions of mercurochrome do not penetrate the living tissue of the urinary, genital and digestive tracts but that they stain dead or dying tissue deep and rapidly. This may explain the contradictory results of other workers. Besides, in making frozen or other sections, it is difficult to avoid the dissolving of the dye on the surface during this procedure, thus producing secondary staining of the dead tissue.

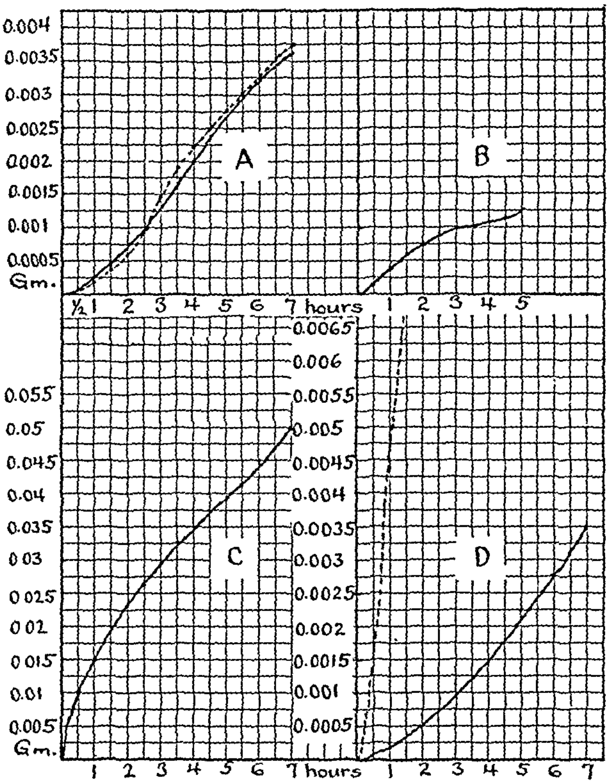
Diffusion of Mercurochrome Through Frog-Skin.—In order to obtain a conception of the rate of diffusion, in comparison with other drugs, the following experiments were performed:

The skin was stripped from the legs of frogs in the customary way, according to Sollmann,[38] attached to glass tubes of 0.75 cm. diameter, filled with 5 cc. of the solutions to be tested, and suspended in cylinders containing 150 cc. of Ringer solution (p_H 7.6). Care was taken that the level of the liquid inside and outside was the same, in order to avoid filtration pressure. The amount of the perfused dye was determined colorimetrically by adding enough of the original dye solution to 150 cc. of Ringer solution, in a cylinder of the same diameter, to match the color in the diffusion cylinder. In this way 2 per cent solutions of mercurochrome in aqueous and in acetone-alcohol-aqueous solution were compared with 2 per cent solutions of gentian violet in both solvents and with tincture of iodine and compound solution of iodine.

The accompanying chart illustrates these experiments. The rate of perfusion of both mercurochrome solutions is about the same (*A*). It is somewhat greater than with gentian violet (*B*), and considerably slower than with tincture of iodine (*C*), or compound solution of iodine. (It should be noticed that the iodine chart is based on a ten times larger unit.) It should also be mentioned that the rate of diffusion with mercurochrome is considerably slower when the diffusion is done in the opposite direction, namely, from the outside toward the inside, by using inversed sacs of skin. This has been observed by E. Wertheimer[39] for other dyes.

Diffusion experiments with compound solution of iodine and 2 per cent aqueous solutions of mercurochrome, short pieces of isolated rabbit intestine being used instead of frog skin, gave essentially similar results, as illustrated at *D*. It may also be noticed that with mercurochrome the diffusion is very slow in the beginning, and that it increases with the progressing deterioration of the skin. At lower temperatures the rate of diffusion remains exceedingly small for many hours. The great difference between the rate of diffusion between the two dyes and that of the solutions of iodine might be explained in part by the precipitant action of the latter on proteins, which would tend to alter the conditions of the membranes considerably.

Mercurochrome, gentian violet and iodine penetrate, therefore, the dead skin of the frog, and the dead rabbit intestine, although the absolute quantities are small, being with mercurochrome one five-hundredth after one hour and one fiftieth after four hours, of the total amount present in the inside of the membranes. For gentian violet, the corresponding values are one two hundred and fiftieth and one one-hundredth, and for iodine one twentieth for the tincture, and one fiftieth for compound solution of iodine, and one tenth and one fifth, respectively.



Diffusion through frog skin and rabbit intestine: *A*, frog skin: solid line, aqueous 2 per cent mercurochrome; broken line, acetone-alcoholic. *B*, frog skin: 2% gentian violet, aqueous. *C*, frog skin; U. S. P. tincture of iodine (scale reduced to one tenth). *D*, rabbit intestine; solid line, 2 per cent mercurochrome; broken line, compound solution of iodine, iodine 5 per cent, potassium iodide 10 per cent.

Toxicity of Mercurochrome for Living Tissue.—It has been claimed that the toxicity for living tissue is very low and that, according to Reddish, human spermatozoa survived the treatment with 2 per cent of mercurochrome in the ratio of one part of spermatic fluid and one part of mercurochrome solution for one-half hour; i. e., that they survived this period in a 1 per cent solution. These observations were made in a medium rich in proteins and it seemed, therefore, advisable to check this by other methods.

Effect of Mercurochrome on Ciliary Movements.—This was studied by observing the velocity of the ciliary movements of the ciliary cells of the frog pharynx after bringing them in contact with the solutions to be tested.

Two series of experiments were performed, one on small pieces of mucous membrane snipped from the pharynx and one on scrapings. The larger pieces represent more nearly the conditions under which the antiseptics are applied in practice; the scrapings show the effect on the isolated cells or on small masses. The clipped tissue, because of the smaller surface exposed and the lesser injury, is much more resistant than the teased preparation. Table 2 shows that 2 per cent mercurochrome, 2 per cent eosin, 2 per cent methylene blue (methylthionine chloride, U. S. P.) affect the clipped tissue only very slightly. Gentian violet in 2 per cent solution is distinctly more toxic, and this holds true to a higher degree for acriflavine hydrochloride, and especially for compound solution of iodine, of which solutions containing 0.125 per cent of iodine kill the cells immediately when brought in contact.

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[38] Sollmann, T.: J. Pharmacol. & Exper. Therap. **21**: 200, 1922.
[39] Wertheimer, E.: Arch. f. d. ges. Physiol. **199**: 383 ff., 1923.

Table 2.—*Effect of Dyes on the Ciliary Movements of the Frog Pharynx**

Drug and Concentration	Snipped Tissue				Teased Tissue
	Slowed	Markedly Slowed	Very Markedly Slowed	Dead	
Mercurochrome, 2%....	10	11	20	2 hrs.	single cells immediately dead, 25 cells or more in 5 minutes, larger lumps in 30 minutes
Mercurochrome, 5%....	4	6	13	22	single cells immediately dead, 25 or more in 4 minutes, larger lumps in 15 minutes
Mercurochrome, 10%...	6	9	13	18	most cells dead in 30 seconds
Eosin, 2%..............	4	..	1½ hrs.	more than 2 hrs.	small lumps slowed in 7 minutes; all dead in 10-28 minutes
Gentian violet, 2%.....	2	..	10	40	
Methylene blue, 2%....	..	70	..	more than 2 hrs.	isolated cells killed and stained at once; *larger lumps survived for 7 minutes*
Acriflavine, sat. sol. less than 2%	..	..	..	15	all dead in 2 minutes
Compound solution of iodine, 0.125 per cent	..	..	..	Immed.	

* The figures indicate the time in minutes.

On account of the more rapid toxic effect, the teased tissue does not allow such a differentiation of the toxicity of the solutions used, but it reveals another phenomenon. Single cells were killed immediately, groups of cells after a few minutes and larger conglomerations only after a longer period of contact. Whereas the single cells were stained immediately, larger pieces were first stained on the edges and only considerably later in the center, although the dye had access to all parts of the tissue. From this it appears that only the injured or dead cells are stained and that the normal cells are not affected by the dye. This confirms the observations made with muscular and other tissues, in which only the necrotic or dead structures were stained. It was also noticed that the ciliary movements stopped as soon as the nuclei were stained, whereas diffuse staining of the protoplasma went parallel with the progressive slowing of the ciliary motility.

CONCLUSIONS

It appears that mercurochrome, when once fixed on the surface of the tissue, develops no bacteriostatic action in contact with bacterial cultures.

It penetrates only into the dead or dying mucous membranes of different organs, such as bladder, vagina and digestive tract, and it may diffuse through the cornea when in contact for a sufficient period.

It does not penetrate the living skin but is fixed in the most superficial layers of the epithelium, and it does not penetrate or stain normal muscular tissue.

It penetrates necrotic and dead tissue and stains them deeply and permanently.

The tissue toxicity of mercurochrome is relatively low, but the 5 per cent aqueous solution is distinctly injurious as judged by excised ciliated mucous membranes.

Mercurochrome cannot be relied upon to destroy bacteria that have penetrated into the living tissue of a wound or of the skin; it could do no more than disinfect the surface and the necrotic tissue. This limitation is shared more or less by all antiseptics so that no substance can be properly called a safe and certain wound antiseptic. No antiseptic takes the place of thorough cleansing and surgical treatment. When these are not practical, for "first aid" or for very superficial wounds, antiseptics are probably better than no treatment at all. The antiseptic efficiency of mercurochrome is not outstanding, and for skin disinfection the aqueous solution is distinctly inferior. The absence of irritation may be an advantage, especially with open wounds, and for prolonged treatment; but its limitations should always be borne in mind.

Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

THE INSTITUTE OF AMERICAN MEAT PACKERS GENERAL AND EDUCATIONAL ADVERTISING

Sponsors.—Institute of American Meat Packers, Chicago: an educational and research association of the meat packing industry established to further the welfare of the industry, to promote proper trade relations, to prosecute research on its products, and to promulgate advertising.

The following listed educational publications have been found acceptable as conforming to the Rules and Regulations with the exception of a few minor statements contained therein, which are being corrected in new revised editions. The institute agrees to maintain its future advertising and publications entirely correct and in compliance with the Committee's Rules and Regulations. The Institute of American Meat Packers is therefore entitled to display the seal of this committee on its publications and advertisements.

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Pork Cookery.
Sausage.
The Perfect Pie Maker.
The Merits of Pure Lard.
Pure Lard.
Have a Heart.
Meat and the Well Balanced Diet.

The principal claims used by the association in promotion of meat follow:

1. Meat is an excellent source of high quality protein.

2. Lean meat, kidney, liver, heart and tongue are among the richest sources of food iron.
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4. Lean meats supply most minerals required in nutrition in good quantity excepting calcium.
5. Lean meats are a good source of vitamin G (B_2).
6. The fat of beef animals is a good source of vitamin A, while oleo oil and oleomargarine made from it are rich in vitamin A and contain vitamin D.
7. While lean meats furnish modest quantities of calories, the fatter meats supply liberal amounts, and bacon and salt pork are among the richest food sources of calories.
8. Edible specialties, such as liver, kidney, heart and tongue, are good sources of vitamins A, B and G.
9. Meat is one of the most digestible of foods, its protein being almost entirely digestible.
10. The body fats of beef, pork and lamb, as well as prepared shortening such as lard or oleomargarine, are almost completely digestible (from 96 to 97 per cent).

RALSTON WHEAT CEREAL

Whole Wheat with Embryo added and only coarsest Bran removed

Manufacturer.—Ralston Purina Company, St. Louis.

Description.—Essentially whole wheat with coarsest bran removed and with added wheat embryo; contains more than twice as much embryo as whole wheat; in granular form.

Manufacture.—Dark hard winter wheat is cleaned by the usual screening, scouring, brushing and other milling operations, broken between steel reduction rolls, and passed over sieves of definite mesh to remove large bran flakes and fine flour; air currents effect the bran removal. Material of a definite granulation is selected for the product.

The wheat germ is passed over grinding rolls and appropriate screens to obtain a desired granulation, which is mixed with the prepared granular wheat. Before packing, the mixture is heated at 60 C. for about twenty minutes to destroy insect life. The final mixture is automatically packed in paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	9.2
Ash	1.5
Fat (ether extract)	2.1
Protein (N × 5.7)	14.2
Crude fiber	1.2
Carbohydrates other than crude fiber (by difference)	71.8
Calcium (Ca)	0.04
Phosphorus (P)	0.37
Potassium (K)	0.35
Sodium (Na)	0.03
Magnesium (Mg)	0.27
Chlorine (Cl)	0.005
Iron (Fe)	0.006

Calorics.—3.6 per gram; 102 per ounce.

Vitamins.—The vitamin B, G and E content is more than twice that of whole wheat, owing to the addition of extra wheat germ. The product is considered a good to rich source of B and E, and a fair to good source of G.

Claims of Manufacturer.—A quick cooking wheat cereal containing more embryo and less bran than whole wheat; valuable for its vitamin B and food iron content.

STEERO BOUILLON CUBES

Manufacturer.—American Kitchen Products Company, New York.

Description.—A mixture of concentrated meat extract, concentrated vegetable extract, salt and beef fat, flavored with celery seed and pimento and an extract of fresh celery, parsley and leeks; in cube form.

Manufacture.—The vegetable extract is prepared by digesting vegetables in dilute hydrochloric acid until the protein is hydrolyzed and rendered soluble in water. The acid is neutralized with sodium carbonate, and the solution is filtered and concentrated in glass lined vacuum stills to a semisolid mass.

The meat extract is prepared by cooking fresh beef flesh in water.

The meat and vegetable extracts are mixed and heated, salt is added, and the mass is concentrated at about 100 C. to a dough-like consistency. Rendered beef fat which has been heated with celery, parsley and leeks is added to the hot dough-like mass and the heating is continued for a short time. After cooling, the mass is rolled and cut into cubes. The cubes are wrapped in wax-paper lined tinfoil by machinery and packed in tin boxes.

Analysis (submitted by manufacturer).—

	per cent
Moisture	6.8
Ash	68.2
Sodium chloride	62.5
Salt (NaCl) free ash	5.7
Fat (ether extract)	1.6
Nitrogen	3.5
Nitrogenous substances estimated as protein (N × 6.25) (only a portion of nitrogenous substances exist as protein)	21.9
Sucrose and reducing sugars	0.0
Creatinine	1.4
Creatine	0.6
Phosphorus (P)	0.36

(Analysis of an average sample of meat extract used)

	per cent
Moisture	16.9
Ash	31.3
Sodium chloride	7.4
Acidity (as lactic acid)	13.1
Nitrogen	10.8
Creatinine	8.7
Phosphorus	1.48

Calorics.—1.0 per gram; 28 per ounce.

Claims of Manufacturer.—The cubes are intended for flavoring a variety of dishes for the table and the preparation of bouillons, broths and soups.

PLEZOL TWIN BREAD

Manufacturer.—Frank Baker Bread Company, Lima, Ohio.

Description.—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932, p. 817); prepared from patent flour, water, lard, dry skim milk, sucrose, salt, yeast, malt syrup and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.4
Ash	0.8
Fat	1.0
Protein (N × 6.25)	8.5
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	54.0

Calorics.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

PORTOLA FRENCH STYLE SARDINES

(In Pure Olive Oil)

Manufacturer.—K. Hovden Company, Monterey, Calif.

Description.—Cooked immature sardines (Clupea caeruleus blue sardines) packed in olive oil.

Manufacture.—The fish are harvested as described for Portola Sardines (Pilchards) (The Journal, June 4, 1932, p. 1991) and immediately on landing are spread over tables, eviscerated, placed in a light brine for fifteen minutes to extract the blood, passed over a draper drier for sixty minutes and dried with hot air until the tails become brittle and the skin fairly dry, after which they are placed in thin layers in wire baskets and submerged in boiling cottonseed oil until thoroughly cooked. They are washed off with steam and fresh water to remove the oil, air cooled, and packed in olive oil in tins, which are processed under the control of the California State Board of Health as to temperature and time.

Analysis, Calorics and Claims of Manufacturer.—See these sections for Portola Sardines (Pilchards).

LAFER BROS. GOLDEN TABLE SYRUP

(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—Lafer Brothers, Detroit.

Description.—A table syrup; a corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calorics, Claims of Manufacturer.—See these sections for Banner Blue Corn Syrup with Cane Flavor (The Journal, March 5, 1932, p. 817).

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SATURDAY, JULY 9, 1932

AN INTERPRETATION OF ANGINAL PAIN

Consideration of the clinical syndrome commonly described as angina pectoris must inevitably take into account the nature and primary location of the pain that is its most characteristic accompaniment. There have been numerous theories but, as a recent writer [1] has remarked, the striking diversity of these is sufficient proof of our inadequate knowledge of the subject. Often there are no demonstrable gross anatomic changes adequate to furnish an intelligible morbid anatomy of angina pectoris. It seems almost like an anomaly that a disorder ordinarily so easy of diagnosis should remain so perplexing in respect to the causes of the principal manifestations. In some quarters it has been held that anginal pain arises directly out of spasm of the coronary arteries in cardiac ischemia.[2] The more widely accepted view is that the pain is of muscular origin. It has been compared to the sensation of a muscle in a condition of severe cramp. In any event the problem of ischemia of the heart must be given some consideration, for it is known that pain can be brought about in various muscles when they are made to contract for some time during a diminished blood supply to them.

Spasm of the coronary vessels, intermittent claudication and anoxemia of the heart muscles have all been debated in relation to anginal pain. According to Keefer and Resnik,[3] a critical analysis of the theories that attribute angina pectoris to coronary spasm, to disease of the aorta or to myocardial exhaustion demonstrates that these views are open to such serious criticism that they become unacceptable; it can be shown, moreover, that anoxemia of the heart explains every characteristic of angina, including the likelihood of sudden death, which must be considered an integral feature of the condition. The percentage of instances in which conditions capable of producing anoxemia of the myocardium have been found in cases of undoubted angina is so high that the accuracy of the diagnosis in the few remaining instances seems open to question. Keefer and Resnik feel that an eclectic theory which admits a varied basis for angina should be abandoned. The angina pectoris of Heberden, they conclude, has but one cause, anoxemia of the myocardium.

Sir Thomas Lewis [4] of London has ventured to elucidate the debatable pain features by studying the analogous pain in ordinary muscular ischemia. The exercise used has been a simple gripping movement in the arm. The contractions are almost maximal, at the rate of one a second. The circulation is arrested during the exercise by means of a sphygmomanometer cuff, which is distended to a high pressure on the upper part of the arm. In an observation of this kind, pain begins from about twenty-five to forty-five seconds (or the same number of contractions) after the beginning of exercise; it develops progressively, increasing in intensity and rendering a continuation of exercise, still vigorously pursued, disagreeable or intolerable at about the seventieth second. The pain is continuous; it does not increase appreciably with the contraction of the muscle, and it does not subside with the relaxation. It is a smooth pain, gradually but constantly growing in intensity while exercise lasts. Thus, it is shown to be independent of the tension developed during the contraction of the muscle. The pain is not the result of cramp. The pain is determined by some chemical or physicochemical agency within the mass of muscle, for the factor underlying pain continues unchanged until the circulation is restored, whereupon it is promptly removed. In other words, in any contractile phenomena with the circulation free the change within the muscle fibers that ultimately underlies pain occurs, but pain does not develop, since the chemical factor cannot accumulate in the tissue spaces while these are under the influence of a free stream of blood.

According to Lewis's conclusions in his Billings Lecture at Chicago last fall, his observations [5] afford, for the first time, evidence for the belief that in ischemia pain arises from a working muscle and that the stimulus is derived from physiologic processes in the muscle fiber. Further, he states, if the characteristics of anginal pain and the various circumstances in which it arises and is influenced are closely considered in the light of these observations on somatic muscle, much that was previously obscure becomes plain to the understanding.

If, as Lewis postulates, anginal pain results from relative ischemia of the cardiac muscle, it may be provoked in distinct ways. Thus, it may be incited if the blood supply to the muscle becomes diminished, while the work done remains constant, or it may be provoked if the blood supply fails to increase adequately to the needs of a muscle that is called on to increase its work. The pain attending coronary occlusion originates from muscular ischemia. Spasmodic anginal pain is not due to strain on a structure such as the aorta but rather to relative ischemia. If one accepts the idea that attacks of anginal pain are brought about by relative ischemia of the muscle, according to Lewis, the relief of pain by nitrites may clearly come through a decrease of expenditure of energy, through an increase of blood supply, or by the joint effects of these two.

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[1] Cecil, R. L.: A Textbook of Medicine, ed. 2, Philadelphia, W. B. Saunders Company, 1930.

[2] Gallavardin, L.: Les angines de poitrine, Paris, Masson et Cie, 1925, p. 126.

[3] Keefer, C. S., and Resnik, W. H.: Angina Pectoris, a Syndrome Caused by Anoxemia of the Myocardium, Arch. Int. Med. **41**: 769 (June) 1928.

[4] Lewis, Thomas: Pain in Muscular Ischemia, Arch. Int. Med. **49**: 713 (May) 1932.

[5] Lewis, Thomas: Pain in Muscular Ischemia, Arch. Int. Med. **49**: 713 (May) 1932. More detailed information is given in Lewis, Thomas; Pickering, G. W., and Rothschild, P.: Heart **15**: 359 (July) 1931.

VITAMIN DEFICIENCIES AND NERVOUS SYSTEM LESIONS

Since Eijkman[1] showed that noninflammatory atrophic degeneration of the medullary sheaths of peripheral nerves occurred in hens fed on a diet of polished rice, it has been known that dietary deficiencies cause lesions of the nervous system. The factor responsible for this particular morphologic change was shown by Woollard[2] and others to be produced by a deficiency of vitamin B. Recently it has been found that what has heretofore been called vitamin B is really a mixture of at least two components; namely, the heat-labile antineuritic factor and a thermostable substance, the absence of which is thought to produce pellagra. Stern and Findlay[3] studied the changes in the nervous system of rats fed diets deficient in vitamin B (antineuritic component) and G (pellagra-preventive factor), respectively. In the first group of animals, they found chromatolytic changes in the ganglion cells of the spinal cord and early degeneration of the myelin of the peripheral nerves. In the second group, the changes consisted of swelling and vacuolization of the anterior horn cells of the spinal cord with the deposition in them of lipochrome pigment. Recently Zimmerman and Burack[4] have reported extensive demyelination of the peripheral nerves of dogs on a diet deficient in vitamin B, but they found similar though less marked changes in dogs that were entirely deprived of food except for adequate vitamin B complex in the form of vitavose. In animals that were partially or wholly on a diet deficient in vitamin G there were present degenerative lesions in the vermis cerebelli, the restiform bodies, and the fasciculus gracilis of the spinal cord, as well as demyelination of the peripheral nerves. Degeneration of the myelin sheaths of the median dorsal columns were found by Winkelman[5] in a case of human pellagra, and both Pentschew[6] and Langworthy[7] reported disseminated foci of demyelination in the spinal cords of similar cases.

It has been held that deficiencies in the vitamin B complex alone were responsible for lesions of the nervous system, but in 1931 Pappenheimer and Goettsch[8] described softenings in the cerebellum in chicks which they attributed to a lack of vitamin E. These lesions were in every way identical with those described by Zimmerman and Burack in their dogs subsisting on a diet deficient in vitamin G. Mellanby,[9] too, has reported observations on puppies deprived of vitamin A which developed degenerative changes in the form of demyelination of the nerve fibers of the spinal cord similar to the lesions seen in subacute combined degeneration. Furthermore, Hess[10] described focal degeneration of the lumbar cord in a case of infantile scurvy complicated by rickets.

If it can be assumed that, in the experimental work, lesions in the nervous system are produced as the result of single rather than multiple vitamin deficiencies, it must be granted that a large variety of vitamins play a specific part in the production of these lesions. Or, at least, any one of them can play an important contributory part to some factor, as yet entirely unknown, which is activated by them and alone produces the lesions. Which of these factors is responsible for the changes observed must await solution by the experimental method. It is more than likely that little in the way of positive proof can be adduced from the human cases of deficiency diseases associated with changes in the nervous system, as they almost certainly represent multiple deficiencies.

BASAL METABOLISM AND PUBERTY

In a discussion of the energy requirements of children, a recent volume on nutrition[1] remarks that the energy requirements of the body probably are better understood than any of the other specific nutritive requirements. Because energy is an old story, and because rare instances have been discovered among human beings of nutritional failure resulting from restricted choice of foods even when the total quantity was plentiful, there has been a tendency in some quarters to regard calories as of no further importance. It requires only the stress of some major calamity such as war, flood or an economic emergency, however, to revive the realization that supplying enough to eat to a population means a sufficiency of calories as well as that freedom of choice which is the everyday guaranty of quality (vitamins, minerals, amino-acids). Considerations of energy requirements start logically from a discussion of the basal metabolism, which has been defined as that level of metabolism which prevails when all modifying factors are producing their minimal effects. These factors, as usually stated, are food, work and temperature.

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[1] Eijkman, Christiaan: Eine beriberiahnliche Krankheit der Hühner, Virchows Arch. f. path. Anat. **148:** 523, 1897.

[2] Woollard, H. H.: The Nature of the Structural Changes in Nerve Endings in Starvation and in Beriberi, J. Anat. **61:** 283 (April) 1927.

[3] Stern, R. O., and Findlay, G. M.: The Nervous System in Rats Fed on Diets Deficient in Vitamins B_1 and B_2, J. Path. & Bact. **32:** 63 (Jan.) 1929.

[4] Zimmerman, H. M., and Burack, Ethel: Lesions of the Nervous System Resulting from Deficiency of the Vitamin B Complex, Arch. Path. **13:** 207 (Feb.) 1932.

[5] Winkelman, N. W.: Beiträge zur Neurohistopathologie der Pellagra, Ztschr. f. d. ges. Neurol. u. Psychiat. **102:** 38, 1926.

[6] Pentschew, A.: Ueber die Histopathologie des Zentralnervensystems bei der Psychosis pellagrosa, Ztschr. f. d. ges. Neurol. u. Psychiat. **118:** 17, 1928.

[7] Langworthy, O. R.: Lesions of the Central Nervous System Characteristic of Pellagra, Brain **54:** 291 (Sept.) 1931.

[8] Pappenheimer, A. M., and Goettsch, M.: A Cerebellar Disorder in Chicks, Apparently of Nutritional Origin, J. Exper. Med. **53:** 11 (Jan.) 1931.

[9] Mellanby, Edward: The Experimental Production and Prevention of Degeneration in the Spinal Cord, Brain **54:** 247 (Sept.) 1931.

[10] Hess, A. F.: Focal Degeneration of the Lumbar Cord in a Case of Infantile Scurvy, J. Infect. Dis. **23:** 438 (Nov.) 1918.

[1] Growth and Development of the Child: Part III. Nutrition, White House Conference on Child Health and Protection. New York, Century Company, 1932.

A controversy has arisen of late regarding the alleged influence of racial characters on the basal metabolism of adults. A recent writer[1] has remarked that the almost uncanny agreement found in applying the formulas of surface area to the basal metabolism of individuals of widely different body form, widely different proportions of body fat, and so on, have served to inhibit rather than stimulate interest in the effects of minor differences. These may be assumed to include the hereditary factors that affect body size and proportion, those which affect nervous organization, and those which produce a tendency to leanness or fatness, aside from the endocrine functions. There is more general agreement that adolescent children have a "distorted" energy requirement. Part of this is undoubtedly attributable to the unusual activity of growing children. Even for the basal metabolism, however, Du Bois,[2] who has devoted much attention to the subject, believes that there is a rise in basal metabolism before puberty with a subsequent fall; but the proof will come, he concludes, only when a number of individual boys and girls are studied every year, or, better, every six months between the ages of 10 and 16 years.

A contribution to the subject has lately been reported from the pediatric service of the Mount Sinai Hospital in New York by Topper and Mulier.[3] The basal metabolism of twenty-eight girls and ten boys from 10 to 16 years of age was studied at intervals of from six months to a year over a period of from one to four years. It was found that there was an increase in the basal metabolic rate in the prepubescent period, reaching its maximum around the time when the menses were established in girls and sexual maturity in boys, with a subsequent decline afterward. There was no uniformity in the height of the increased metabolism or in the duration of the increase. Some of these children had no other symptoms of an overacting thyroid gland. Others presented such symptoms as an enlarged thyroid gland, tremor, nervousness, vasomotor instability, cardiac murmur and tachycardia—all of which symptoms disappeared as the basal metabolic rate returned to the previous normal level, when puberty was well established.

Topper and Mulier believe that an increased basal metabolism is physiologic during pubescence. This increase coincides with the physiologic age rather than with the chronological age and occurs earlier in girls than in boys, coincident with their earlier pubescence. As there seems to be an individual variation in the height and duration of the increased metabolism, it makes the adoption of normal standards difficult for this important age period. The increased basal metabolism may be associated, according to the New York pediatricians, with symptoms simulating organic heart disease or, more especially, exophthalmic goiter. Therefore, they conclude, in evaluating high metabolic figures at this period, the clinical manifestations of pubescence have to be considered. Exophthalmic goiter is rare before puberty and should not be confused with the physiologic overactivity of the thyroid gland in pubescence, which is temporary and the prognosis of which is excellent.

Current Comment

THE DILEMMA OF LISTERINE

When Congress, which on occasion has attempted to practice medicine, enters into any medical field it is likely to confuse the situation somewhat. Perhaps the good congressional doctors were not aware, when they were concerning themselves with budget balancing, of the difficulties they were conferring on some of America's leading industrial concerns; for example, the Lambert Pharmacal Company, concocters of Listerine. Not long ago The Journal reported the results of the study of this product made by the A. M. A. Chemical Laboratory and the Bureau of Investigation. As a result of this study the opinion was stated that the product cannot be considered in any sense of the word a real germicide and that the claims made for it were hardly justified by available evidence. Now, however, the manufacturer finds himself in a position where it is necessary for him to determine exactly what the product really is good for. Various preparations are taxed according to their uses. The product called Listerine is sold largely as a gargle for sore throats; used in this manner, it is a medicinal agent. Under the new revenue law, medicinal agents are free from tax. However, in order to combat the campaign put forth on behalf of Pepsodent Antiseptic by Amos and Andy, in recent days Listerine has also been widely advertised as a mouth wash. In fact, the technical term "halitosis" was rescued from the musty archives of medical dictionaries and made a byword—and a reproach—by the Listerine manufacturers before Pepsodent appeared on the scene. Mouth washes, under the new revenue law, are taxable at 5 per cent. Furthermore, it seems to have occurred to the agency which promotes Listerine that it has usefulness—at least from the advertising point of view—as an after-shaving lotion and that its virtues for the control of dandruff are extraordinary. By such usage the product becomes a cosmetic or toilet article. The toilet goods tax is 10 per cent. What a dilemma! If the

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[2] Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1927, p. 147.

[3] Topper, Anne, and Mulier, Hannah: Basal Metabolism of Normal Children, Am. J. Dis. Child. 43:327 (Feb.) 1932.

Treasury Department asserts that Listerine is a toilet article, it will have to pay 10 per cent; if it is a mouth wash, it will have to pay 5 per cent, and if it is a medicinal agent, it can get off without a tax. We can assure the Treasury Department, as a result of the investigation carried on by the Chemical Laboratory of the American Medical Association, that as a medicinal agent it is not potent enough to be considered seriously. Whether it pays 5 per cent or 10 per cent is for the authorities to decide, but if it really is to be helpful—although somewhat indirectly—to the people who buy it, the bigger the tax the better!

Association News

TIME OF MILWAUKEE SESSION

The Eighty-Fourth Annual Session of the American Medical Association will be held in Milwaukee, June 12 to 16, 1933.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

July 11. Food and Food Advertising.
July 13. Your Heart.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

July 16. Rheumatism.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Society News.—A symposium on syphilis constituted the program of the Alameda County Medical Society, June 20; the speakers were Drs. Harry J. Templeton, Gertrude Moore, Charles B. Fowler, Oakland, Clifford W. Mack, Livermore, and Archie A. Alexander, Oakland.

Quarantine on Mussels.—Persons who go to beaches along the northern California coast are warned not to eat mussels because of the danger of contracting mussel poisoning, states a recent bulletin of the state department of health. The department prohibits the sale or offering for sale of mussels gathered within the coast area from Monterey County to the Klamath River in Del Norte County during the period May 16-September 30. Examinations of mussels are made at stated intervals throughout the year. It has been determined that these shellfish lose most of their toxicity during the winter months. In the spring they become more toxic, reaching a maximum state of toxicity about the middle of July and gradually becoming less toxic until late fall. The bulletin of the department states that the poisonous qualities are higher at the present time than they are ordinarily at this season of the year. In 1927, there were 102 cases of mussel poisoning with six deaths reported; in 1929, fifty-five cases with four deaths; in 1930, one case, and in 1931, two cases.

CONNECTICUT

Personal.—Lafayette B. Mendel, Ph.D., Sterling professor of physiological chemistry, Yale University School of Medicine, New Haven, received the honorary degree of doctor of laws from Western Reserve University at its recent commencement.——Dr. Winthrop M. Phelps has been appointed professor of orthopedics at Yale University School of Medicine, New Haven.

DISTRICT OF COLUMBIA

Personal.—Dr. Daniel L. Borden was elected president of the alumni association of George Washington University, June 11. Dr. Frederick A. Reuter was elected a vice president of the association, representing the school of medicine.——Dr. John W. Wilce, former football coach at Ohio State University, has been appointed a medical examiner for the aeronautics branch of the U. S. Department of Commerce.

Cancer Hospital for Women.—Construction of Washington's first hospital for the treatment and care of women with cancer will be started soon on the grounds of Garfield Memorial Hospital with funds provided under the will of R. T. Warwick, the Washington *Star* reports. More than $300,000 was bequeathed in the will, to be administered by the Washington Home for Foundlings. An agreement has been reached between the trustees of the home and the hospital, whereby the cancer institution will occupy a portion of the grounds of Garfield Hospital and have available for its use much of the hospital equipment. It was said that a considerable amount of the money will be spent in acquiring equipment necessary for the treatment of cancer alone. Efforts will be made later, it was said, to extend the facilities of the new hospital by seeking additional funds in order that it may be enlarged and better equipped.

ILLINOIS

Chicago

Personal.—Dr. Chauncey C. Maher has been appointed assistant professor of medicine at Northwestern University Medical School, effective June 1.——Dr. Cyrille Vermeren, Belgian consul since 1915, has been awarded the Cross of Officer of the Order of Leopold and promoted to the rank of consul-general, the newspapers recently announced. Dr. Vermeren was a practicing physician in Chicago for years.

Examination of School Children Abandoned.—With the failure of the city to renew the appropriation for twenty-five school physicians and nurses, the physical examinations of school children have been discontinued, newspapers report. The Municipal Tuberculosis Sanitarium has been paying these physicians for this work. The newspapers further reported that the health department, while maintaining a few physicians to handle contagion in the schools, has not conducted physical examinations among the school children for the last fifteen years.

The New Provident Hospital.—Simple ceremonies marked the laying of the corner-stone of the new home of the Provident Hospital, June 14, which is the building formerly occupied by Chicago Lying-In Hospital, now being remodeled. In a cooperative program between the hospital and the University of Chicago, it is planned to develop this institution into a medical education center for Negroes. This program includes the care of the sick, clinical instruction for medical students, an increase in the number of internships for Negro physicians, graduate medical training, opportunities for Negro students for teaching and research. In 1930 a fund of $3,000,000 was subscribed for the development of this center. Provident Hospital, now at 16 West Thirty-Sixth Street, was founded in 1890 and has since been an important center for medical work among Negroes of the community. Rear Admiral Norman J. Blackwood, medical corps, U. S. Navy, retired, has been appointed medical director.

INDIANA

Personal.—A bronze tablet was unveiled, May 31, by members of the Methodist Hospital Staff Society, Indianapolis, in memory of Dr. Charles L. Cabalzer.——Dr. Jesse E. Nixon, Portland, has been appointed health officer of Jay County, succeeding Dr. William H. Walker, Portland.——Dr. Frank C. Walker has been promoted to professor of diseases of women and head of the depar [illegible] liana University School of Medicine,

Dr. Waters Honored.—Dr. Samuel C. Waters, Middletown, was presented with a life membership in the Henry County Medical Society, June 15, at a dinner given by the society in his honor. Dr. Edgar S. Ferris, Newcastle, presided as toastmaster. Speakers included Drs. Hugh A. Cowing, Muncie, and Clifford E. Canaday, Newcastle, Frank W. Cregor and

Homer H. Wheeler, Indianapolis, and Mr. Thomas A. Hendricks, secretary of the state medical society. Dr. Waters has practiced medicine for more than fifty years. As The Journal goes to press, an account is received of the sudden death of Dr. Waters in his office, June 22.

Society News.—Dr. Millard F. Arbuckle, St. Louis, addressed the Vanderburgh County Medical Society, June 14, on "Extraction of Foreign Bodies from the Lungs."——The Whitley County Medical Society was addressed, June 14, by Dr. Ralph W. Elston, Fort Wayne, on "Surgical Diseases of the Abdomen of Children."——Dr. Robert M. Moore, Indianapolis, addressed the Carroll County Medical Society in Bringhurst, June 10, on congestion of the heart and angina pectoris. ——At the May 13 meeting of the Hancock County Medical Society, Dr. Matthew Winters, Indianapolis, spoke on pediatrics.——The Gibson County Medical Society heard a paper on "Gastro-Intestinal Infection in Children" in Princeton, June 13, by Dr. Paul R. Boren, Poseyville.

IOWA

Conference on Child Development.—The sixth annual Iowa State Conference on Child Development and Parent Education was held at Iowa City, June 21-23. Cooperating with the Iowa State Council for Child Study and Parent Education were the Iowa Child Welfare Research Station, the Extension Divisions of Iowa State College and the State University of Iowa and the state teachers' college. Topics discussed included "Child Health and Protection in the State of Iowa," Dr. Fred Moore, Des Moines, and "Mental Hygiene in the Community and State; Mental Hygiene and the Individual Child," Dr. George K. Pratt, New York.

Dr. Evans Honored.—The Webster County Medical Society gave a dinner, April 28, in honor of Dr. Robert Evans, who has practiced for forty years in Fort Dodge, and who, on the forty-fifth anniversary of his graduation in medicine, announced his retirement from practice. Dr. Sumner B. Chase presided as toastmaster at the program which followed the dinner. Dr. William W. Bowen, president, Iowa State Medical Society, with whom Dr. Evans has been associated in practice for many years, reviewed the more noteworthy incidents of their partnership. Other speakers were Drs. Philip B. McLaughlin, Sioux City; Michael J. Kenefick, Algona; Prince E. Sawyer and William Jepson, Sioux City; Channing G. Smith, Granger, retiring president of the state medical society; Edward L. Rohlf, Waterloo, and Howard D. Gray, Des Moines.

Illness Among Button Workers.—Five cases of a condition diagnosed as yellow atrophy of the liver recently occurred at Fort Madison among the personnel of a button factory, with three fatalities. A meeting of physicians disclosed, however, that a total of sixteen cases had been reported since November, 1928, with five deaths. All the cases had occurred in men employed in the button factory during the winter months. The work at the plant involved consists solely of sawing blanks from oysters and clam shells, which are shipped elsewhere to be finished into buttons. The shells are obtained from Texas, Mexico and Illinois. At a meeting of the Fort Madison City Medical Society, it was generally agreed that in view of the absence of any tangible evidence of metallic poisoning, the disease must be considered of an infectious nature. Arrangements have been made for prompt removal to the hospital of the State University of Iowa if another case should develop.

Society News.—A symposium on anesthesia was held at the meeting of the Des Moines Academy of Medicine and the Polk County Medical Society, May 31; the speakers were Drs. John Connell, E. Parish Lovejoy and John Russell.——Dr. Arthur Steindler, Iowa City, addressed the Scott County Medical Society, May 11, on "Periarthritis of the Shoulder."——Dr. Edward J. Stieglitz, Chicago, addressed the eighteenth annual meeting of the Iowa Medical Directors Association on "Prognosis in Hypertension," May 26, in Des Moines. This association is composed of medical directors of all old line life insurance companies in Iowa. Dr. Loren K. Meredith was elected president.——At a recent meeting of the Cass County Medical Society, the speakers were Drs. Reu L. Barnett and Harvey A. Johnson, Atlantic, on Raynaud's disease and thromboangiitis obliterans, respectively.——A symposium on neurosyphilis was presented before the Fayette County Medical Society at Fayette, May 10, by Drs. Robert A. Stewart and George Boody, Independence.——Dr. Emma M. Ackerman, Sioux City, was recently elected president of the Iowa Society for Medical Women.——Dr. Ira N. Crow, Fairfield, was elected president of the Des Moines Valley Medical Association at its recent annual session, and Dr. Edward B. Hoeven, Ottumwa, was reelected secretary.

KENTUCKY

Cancer Death Rate Decreases.—For the first time since 1925 the cancer death rate in Kentucky shows a decrease, according to statistics published by the state board of health. The rate for 1931 was 59.8, compared with 71.2 in 1930. The total death rate for the state was 11 per thousand of population, said to be the lowest except one during the past ten years. Heart disease was the principal cause of death, though there were 223 fewer deaths from that cause in 1931 than in the previous year. The infant mortality rate rose from 66.5 to 68.6, but the increase was attributed to a drop in birth registration, as there were only 24 more deaths. The birth rate recorded was 21.8 per thousand.

LOUISIANA

District Society Organized.—Physicians of the second congressional district, exclusive of Orleans Parish, formed the District Medical Society at a meeting, June 5, in Hahnville. The parishes included in the district are St. Charles, St. James, St. John and Jefferson. Officers elected are Drs. Joseph S. Kopfler, Kenner, president; Louis T. Donaldson, Hahnville, vice president, and Lionel O. Waguespack, Vacherie, secretary. Assisting in the organization of the society were Drs. Leon J. Menville, New Orleans, president, state board of medical examiners, and Paul T. Talbot, New Orleans, secretary, state medical society, both of whom made addresses.

Society News.—Speakers before the Fifth District Medical Society in Monroe, June 14, included Drs. James B. Vaughan, on "Present Economic Situation as It Affects the Medical Profession," and Melville W. Hunter, on "Differential Diagnosis of Early Pulmonary Tuberculosis."——The Seventh District Medical Society was addressed at Lake Charles, June 15, by Dr. Oscar W. Bethea, New Orleans, on angina pectoris. ——At a scientific meeting of the Orleans Parish Medical Society, June 13, speakers included Dr. Sidney M. Copeland on hypertension; Sidney L. Tiblier, D.D.S., "Modern Conceptions of Diagnosis of Oral Pathology," and Dr. Leon J. Menville, "Radiation Therapy of Toxic Goiter."——Dr. Charles A. Bahn, New Orleans, was elected president of the Louisiana Society for the Prevention of Blindness at its recent annual meeting.

MAINE

Society News.—Dr. Herman C. Pitts, Providence, R. I., addressed the Cumberland County Medical Society recently on "Uterine Cancer."——Speakers before the Kennebec County Medical Association at Winthrop, June 2, were Drs. William J. O'Connor, Augusta, and Adam P. Leighton, Jr., Portland, on gastric ulcer and gynecology, respectively.——The Washington County Medical Society was addressed in Eastport, May 26, by Drs. Conrad Wesselhoeft, Boston, on "Acute Anterior Poliomyelitis."——The York County Medical Society was addressed, June 8, in Saco, by Drs. Earl S. Hall, Portland, and Varaztad H. Kazanjian, Boston, on "Newer Aspects and Changes in Treatment of Fractures" and "Oral Surgery," respectively.

MARYLAND

Personal.—Yale University recently conferred the degree of doctor of literature on Dr. Fielding Hudson Garrison, librarian of the William H. Welch Library, Johns Hopkins University School of Medicine, Baltimore.

Case of Leprosy.—A case of leprosy was recently reported to the Baltimore health department. The patient, a woman, in the northeastern section of Baltimore, has been isolated at Sydenham Hospital pending her transfer to a leper colony by the U. S. Public Health Service. She has been living in Baltimore for a number of years.

Special Public Health District.—Creation of a special public health district in Baltimore for the training of public health workers has been made possible by a recent grant of about $25,000 for two or more years from the Rockefeller Foundation, through the School of Hygiene and Public Health of Johns Hopkins University, Baltimore. The only change in the existing methods of health work in the district, which will comprise the sixth and seventh wards in eastern Baltimore, will be the appointment of a full time physician as director of a branch of the city health department. The director will supervise the health needs of the district and lecture on public health work to students in the school of hygiene. The interest of Johns Hopkins University in the district will be chiefly in the facilities it will afford to the school of hygiene and public health for practical instruction of students and for investigations in the field of public health.

MASSACHUSETTS

Personal.—The degree of honorary doctor of medicine has been conferred by the University of Amsterdam on Dr. Harvey Cushing, until recently Moseley professor of surgery, Harvard University Medical School, Boston. Dr. Cushing recently received the honorary degree of doctor of science from Northwestern University, Chicago.——The University of Würzburg conferred the degree of doctor of medicine honoris causa on Francis G. Benedict, Ph.D., Boston, director of the Nutrition Laboratory of the Carnegie Institution, May 2.

Testimonial Dinner.—In recognition of the services of four senior members of the faculty of Boston University School of Medicine and the staff of Massachusetts Memorial Hospitals, more than 100 of their colleagues gathered at a dinner in their honor in the University Club, Boston, June 22. The physicians honored were Drs. Joseph Emmons Briggs, professor of surgery; Alonzo G. Howard, professor of orthopedic surgery; Wesley T. Lee, professor of dermatology, and Clarence H. Dobson, assistant in medicine. Dr. Briggs has been connected with the university since his graduation at the institution in 1890. Dr. Howard was graduated from the university in 1895, and Dr. Lee in 1898, and both men became associated with the school immediately after graduation. Dr. Dobson graduated from Hahnemann Medical College, Philadelphia, in 1897, and has been at Boston University School of Medicine since 1921. Dr. Henry M. Pollock, superintendent, Massachusetts Memorial Hospitals, was toastmaster at the dinner. Speakers included Henry S. Grew, president of the board of trustees of the hospitals; E. Ray Speare, treasurer of the university trustees; Dr. Alexander S. Begg, dean of the medical school; Dr. Edward S. Calderwood, physician-in-chief of the hospitals, and Dr. Charles T. Howard, surgeon-in-chief.

NEBRASKA

Fifty Years in Practice.—Dr. John Prentiss Lord, Omaha, and Dr. Harry Hapeman, Minden, are celebrating this year the completion of fifty years of medical practice. Both were born in Illinois, both attended Rush Medical College, Chicago, from which they were graduated in 1882, and they have remained lifelong friends, according to the *Nebraska State Medical Journal*. Dr. Hapeman came to Nebraska in 1881 and Dr. Lord in 1886. Dr. Lord has been professor of orthopedic surgery at Nebraska University College of Medicine since 1913. Before assuming that position, he was professor of surgery at Creighton University School of Medicine for twenty years. He has been president of the Nebraska State Medical Association (1910-1911) and was chairman of the Section on Orthopedic Surgery of the American Medical Association in 1927.

NEW JERSEY

Personal.—Dr. Theobald Smith, Princeton, director emeritus of the department of animal pathology, Rockefeller Institute for Medical Research, received the honorary degree of doctor of veterinary medicine from the University of Giessen at the hundredth anniversary of the granting of veterinary degrees.

Measures to Curb Rabies Adopted.—The state department of health recently adopted a resolution requiring local boards of health to report once a week the occurrence of cases of rabies in dogs. Because of an unusual prevalence in Essex County, the department called on the local authorities there to invoke emergency measures. Dr. Jesse Lynn Mahaffey, state director of health, urged the local boards of health to enforce the regulations requiring dogs suspected of having rabies to be killed or confined for at least six months. Other laws invoked require the reporting of dog bites and the confining of animals that have attacked or bitten any person, the licensing of dogs, and the elimination of unlicensed dogs. In addition, Dr. Mahaffey suggested that dogs, when not restrained to their owners' premises or in leash, be muzzled and, finally, that the public be advised of the prevalence of the disease among dogs and urged to cooperate in its control.

NEW YORK

Society News.—Dr. Chevalier Jackson, Philadelphia, addressed physicians of northern New York and those who are attending the Trudeau School for Tuberculosis at a meeting, June 3, at the National Variety Artists' Sanatorium, Saranac Lake.——Dr. Royd Ray Sayers, Washington, D. C., addressed the Medical Society of the County of Monroe, Rochester, May 17, on "Physical Examinations of Workers Engaged in Hazardous Occupations."

Art Exhibit.—A collection of water colors, bas-reliefs, masks and modeled figures by Dr. Konrad E. Birkhaug, associate professor of bacteriology, University of Rochester School of Medicine, has recently been shown at the Art Center in Rochester. The water colors depicted scenes in many parts of North America and Europe. Dr. Birkhaug has recently left for Europe to spend a year studying at the Pasteur Institute in Paris and he expects to spend some time in the study of art as well.

Annual Health Conference.—The annual conference of health officers and public health nurses of the state was held in Saratoga Springs, June 28-30. The following speakers appeared on the program, among others:

Dr. Frederick F. Russell, New York, "Evolution and Trends of Health Organization."
Dr. Walter T. Harrison of the U. S. Public Health Service, "Toxoid and Its Advantages Over Toxin-Antitoxin."
Dr. Albert VanderVeer, New York, "Hay Fever as a Public Health Problem."
Dr. Herman G. Weiskotten, Syracuse, "Developments in Education in Preventive Medicine and Public Health."
Dr. Frank W. Laidlaw, Middletown, "Studies on the 1931 Poliomyelitis Outbreak: A Preliminary Report."

New York City

Hospital News.—A marine roof was opened, May 26, on the new wing of the New York Polyclinic Medical School and Hospital, not at the New York Postgraduate Medical School and Hospital, as mentioned in THE JOURNAL, June 25.

OHIO

Society News.—William J. Burns, executive secretary, Wayne County Medical Society, Detroit, addressed the annual meeting of the Medical Bureau of Akron, June 14, on medical economics.——Roentgen-ray equipment is being installed at the health center operated by the health department of Cincinnati as the result of a gift of $10,000 from Charles F. Williams, president of the Western and Southern Life Insurance Company, Cincinnati. Dr. Henry Kennon Dunham will have charge of the interpretation of films. The department expects to use the equipment especially in the campaign against tuberculosis.

OKLAHOMA

Graduate Course.—Physicians of eastern Oklahoma are attending a special course dealing with degenerative diseases during the four weeks from June 13 to July 15. Meetings are held once each week in a circuit of six cities. Among the instructors are Drs. Isaac I. Lemann, New Orleans; Elsworth S. Smith, St. Louis; Joseph T. Martin, Arthur W. White, Harry Wilkins, Thomas C. Lowry and Arthur B. Chase, all of Oklahoma City, and James B. McElroy, Memphis.

OREGON

Licenses Restored and Revoked.—The license of Dr. Wilber H. Thompson, Elgin, which was revoked Nov. 20, 1931, for violation of the narcotic law, was restored, May 31, on his promise to abstain from the private use of narcotics. The license of Dr. Joseph A. Wonderlick, La Grande, revoked Nov. 19, 1931, for alleged abortion, was restored, May 31. The state board of medical examiners also reports that the license of Dr. Norman C. Hampton, Portland, was revoked, May 31, for unprofessional conduct.

Society News.—Dr. Milton Earl Wilson, Coquille, addressed the Coos County Medical Society, Marshfield, in May, on poisonous plants.——The Portland Pediatric Society was organized in March.——Drs. William K. Livingston, Portland, and Frank K. Power, Salem, addressed the Polk-Yamhill-Marion Counties Medical Society, McMinnville, May 3, on "Buerger's Disease" and "Retention in the Urinary Bladder," respectively.——Dr. Martín S. Sichel addressed the Portland City and County Medical Society, May 4, on trichomonas vaginalis.

PENNSYLVANIA

Symposium on Dental Caries.—A symposium on the cause and nature of tooth decay was held at the Frick Training School, Pittsburgh, June 23, under the auspices of the Pittsburgh section of the International Association for Dental Research. H. Edmund Friesell, D.D.S., dean, University of Pittsburgh School of Dentistry, and John J. Enright, Ph.D., of Mellon Institute for Industrial Research, presented the results of a nine-year study of tooth decay. The following speakers discussed these contributions: William J. Gies, Ph.D., Columbia University, New York; Dr. Edward H. Hatton, Northwestern University, Chicago; Russell W. Bunting, D.D.Sc., University of Michigan, Ann Arbor; Major Fernando E. Rodriguez, U. S. Army Dental Corps, and Theodor Rosebury, D.D.S., Columbia University, New York.

Philadelphia

Honorary Degrees.—At the commencement ceremonies of the University of Pennsylvania, June 22, the honorary degree of doctor of medicine was conferred on Alfred Newton Richards, Ph.D., professor of pharmacology in the school of medicine. Dr. William Pepper, dean of the school of medicine, and Dr. Barton Cooke Hirst, emeritus professor of obstetrics, received the honorary degree of doctor of science, as did Harlow Shapley, Ph.D., director of the Harvard Observatory, Cambridge, Mass., who delivered the commencement address.

Personal.—The honorary degree of doctor of science was conferred on Dr. Ross V. Patterson, dean of Jefferson Medical College, by Colgate University, Hamilton, N. Y., June 13.——Dr. Willard H. Kinney has been elected president of the Philadelphia Urological Association.——The intern prize of $100 offered by the medical board of the Philadelphia General Hospital has been awarded to Dr. John K. Caldwell for a paper entitled "The Correlation of the Van Den Bergh Reaction and the Icterus Index Test."——Dr. Theodore H. Mendell, resident physician at Mount Sinai Hospital, has been awarded the fellowship offered by the hospital association for graduate study abroad.

TEXAS

State Board Warns Against Impostors.—The Texas State Board of Medical Examiners has sent to chambers of commerce throughout the state a letter asking the cooperation of these organizations in warning the public against medical fakers. The letter urges that any stranger who treats or offers to treat a human being for a disease or disorder, mental or physical, and charge therefor, be required to show the annual registration permit issued by the board or to prove that he has a license on record in the office of the district clerk in the county in which he proposes to practice.

WASHINGTON

Society News.—Drs. Dorrell G. Dickerson and Adolf J. Drtina, Seattle, addressed the Thurston-Mason Medical Society at Shelton in May on "Relief of Headaches" and "Common Afflictions of the Heart and Their Treatment," respectively.——The Yakima County Medical Bureau has recently been organized with Dr. William K. Cocklin as president. The bureau will handle questions arising in industrial practice, such as signing contracts with industrial plants. Under its system, laborers will be able to select their own physicians from the membership of the bureau.

WEST VIRGINIA

Filipino Presents Forged Diploma.—Forged credentials were said to have been used by Joseph del Rosario y Danque, New York, formerly of Manila, to obtain permission to take the West Virginia examinations for license to practice medicine in July and again in November, 1931, according to information received from the University of Santo Tomas, Manila, from which he claimed graduation. He presented a diploma from the Manila university and because the time before the examination was too short in which to obtain verification from the authorities there he was admitted on condition that the necessary documents would be forthcoming. He failed, however, on both examinations. Later correspondence between the Council on Medical Education and Hospitals of the American Medical Association and the University of Santo Tomas revealed that del Rosario attended the school only three years, having left in 1927. The diploma, which the university secretary declares is forged, states that he was graduated, April 10, 1928.

GENERAL

Delegates to Tuberculosis Conference.—Official delegates designated by the United States government to take part in the eighth conference of the International Union Against Tuberculosis in Amsterdam in September are Drs. William Charles White, Washington, D. C.; Kendall Emerson and S. Adolphus Knopf, New York; Stephen J. Maher, New Haven, Conn.; Eugene L. Opie, Philadelphia; Stuart Pritchard, Battle Creek, Mich.; Willard B. Soper, West Haven, Conn., and Hugh de Valin of the U. S. Public Health Service.

Study of Air Conditions.—Basic data on the condition of the air in the average American city as to the presence of soot, ash, sulphur, lead, iron and carbon monoxide is to be obtained through a study recently initiated by the U. S. Public Health Service. It will be extended over two years in Washington, Baltimore, Philadelphia, New York, Boston, Buffalo, Cleveland, Detroit, Chicago, Pittsburgh, St. Louis, San Francisco, Los Angeles and New Orleans. It is expected that the field part of the study will be completed sometime during 1933.

Board of Otolaryngology Emphasizes Standards.—The five societies whose representatives make up the American Board of Otolaryngology have approved at their respective annual sessions for 1932 a resolution commending the work of the board and requesting state boards of medical examiners to keep in mind its standards when formulating any regulation or classification of physicians claiming to be specialists in this field. The resolution points out that standards for the practice of the specialty have been distinctly elevated and graduate instruction in the United States and Canada has been improved as a result of the voluntary appearance before the board of candidates for certification. Numerous regional special societies, hospital staffs and medical school faculties have prescribed the board's certificates as prerequisites to membership. The societies which cooperate in this work are the American Laryngological Association, American Otological Association, American Laryngological, Rhinological and Otological Society, American Academy of Ophthalmology and Otolaryngology and the Section on Laryngology, Otology and Rhinology of the American Medical Association.

Prevalence of Cerebrospinal Meningitis.—Following the epidemic outbreaks of cerebrospinal meningitis during the years of the World War, the incidence of the disease decreased for several years, but a decided upward trend has been observed since 1922, according to a study made by the health section of the League of Nations. The highest point was reached in 1929 in the countries of south central Europe but not until 1931 in England, Scotland and the Netherlands. In England, the number of cases increased from 666 in 1930 to 2,160 in 1931 and in the first quarter of 1932, 733 cases were reported. In the United States the maximum was reached in 1929, when more than 10,000 cases were reported. The decrease is evident in a comparison between the number of cases reported in January and February, 1932 (320 and 335, respectively), and the figures for the same months of 1931 (595 and 588, respectively). The disease has increased steadily since 1923 in Russia, though part of this increase is attributed to improved reporting. A serious epidemic has recently been reported from lower Egypt, beginning in November, 1931, and reaching as high as 637 cases per week in March. Meningitis has been endemic in the large ports of the Far East for some years with sporadic epidemics. Shanghai had an outbreak of 1,187 cases, with 403 deaths in 1929, and severe outbreaks have occurred this year in Hong-Kong and Macao.

Society News.—The Society for Experimental Biology and Medicine at its recent annual meeting elected the following officers: president, Dr. Alphonse R. Dochez, New York; vice president, Dr. Eugene L. Opie, Philadelphia, and secretary, Abraham J. Goldforb, Ph.D., New York.——At the annual meeting of the American Gynecological Society, Quebec, June 1, Dr. Floyd E. Keene, Philadelphia, was elected president; Dr. William B. Hendry, Toronto, vice president; Dr. George W. Kosmak, New York, treasurer, and Dr. Otto H. Schwarz, St. Louis, secretary.——Dr. James V. May, Boston, was elected president of the American Psychiatric Association at its meeting in Philadelphia, June 3, and Dr. Clarence O. Cheney, New York, secretary.——The American Urological Association at its annual meeting in Toronto, June 1, elected the following officers: Drs. Nathaniel P. Rathbun, Brooklyn, president-elect; George R. Livermore, Memphis, president, and Gilbert J. Thomas, Minneapolis, secretary.——The American Society for Cancer Research has recently elected officers as follows: Drs. Edward B. Krumbhaar, Philadelphia, president; Ward J. MacNeal, New York, vice president, and William H. Woglom, New York, secretary.——The annual meeting of the American Occupational Therapy Association will be held in Detroit, September 13-15.——Dr. John H. Peck, Des Moines, Iowa, was elected president of the National Tuberculosis Association at the annual meeting in Denver, June 8. Vice presidents are Drs. Lewis J. Moorman, Oklahoma City, and Harry L. Barnes, Wallum Lake, R. I.; secretary, Dr. Charles J. Hatfield, Philadelphia, and treasurer, Henry B. Platt, New York.——The Southern Interurban Gynecological and Obstetrical Society held its second annual meeting in New Orleans, May 7. The following officers were elected: Dr. John W. Turner, Atlanta, president; William T. Pride, Memphis, vice president, and Percy H. Wood, Memphis, secretary. Among the speakers were Drs. Walter T. Dannreuther, New York, on "The Use of Radium in Gynecology in Other Conditions Than Cancer," and C. Jeff Miller, New Orleans, "Conservative Management of Pelvic Infections."

FOREIGN

Trachoma Prize Awarded.—Dr. Ugo Lumbroso, Tunis, and Dr. J. Taboriski, Palestine, have been awarded the International Trachoma Prize of 2,000 Swiss francs, offered by the royal Hungarian minister of public welfare and labor (The Journal, April 11, 1931, p. 1243) for an essay on the etiology of trachoma. Honorable mention was given to Dr. Cattaneo, Sassari; Dr. P. Olitsky, New York; Rotth and Kanyo, Budapest, and C. Trapezontzewa, Moscow, it was reported.

Courses in Berlin.—Graduate courses in medicine arranged for the autumn by the Lecturers Association and the Kaiserin Friedrich-Haus of Berlin in association with the faculty of the University of Berlin include the following: internal medicine, October 17-29; tuberculosis, October 10-15; general medicine, October 10-15; urology, September 26-October 1; medical psychology and psychotherapy, October 17-22; intrathoracic diseases, October 17-21. Information may be had from Kaiserin Friedrich-Haus, Berlin N.W. 7, Robert Koch-Platz 2-4.

British Prize Competition. — The Sir Charles Hastings Clinical Prize, which consists of a certificate and a money prize of 50 guineas, is again offered to members of the British Medical Association for essays on personal observations and experiences collected in the course of general practice. Essays are to be submitted before December 31, and the prize will be awarded at the 1933 meeting of the association. This award was established by the council of the British Medical Association for the promotion of systematic observation, research and record in general practice.

Council to Regulate Medical Advertising.—The government of Yugoslavia is reported to have decreed that all medical advertising must be scrutinized by the permanent expert council of the ministry of social welfare and public health before it can be placed in newspapers and magazines. The advertiser must submit to the council the text of the advertisement, with any illustrations to be used, together with a copy of the permit to sell in Yugoslavia and any other data serving to classify the medicine, together with the prescribed fees, which amount to about $30. He must in addition bind himself to supply to the council the first copy or issue of the paper or magazine and subsequently one copy of the newspaper each month and a copy of the magazine every three months. On all printed advertisements there must appear this legend: "Approved by the Ministry of Social Welfare and Public Health, S. Number ——" and the date. These regulations apply to "every individual or firm, domestic or foreign, having the right to produce, sell or import into the country medicines and medicinal specialties, and wishing to advertise these in the daily papers or in any other manner," according to the report.

Society News. — The headquarters of the International Congress on Biliary Lithiasis, which is to be held at Vichy, France, September 19-22, announces that the principal French railways have extended the time during which the vouchers for special rates may be used from fifteen to thirty days. They can now be used for the whole month of September, thus allowing physicians attending the congress to remain in France longer if they desire. The latest date for receiving applications for membership in the congress is August 1.——A society for the study of the physiology and pathology of the voice and speech was founded in Paris, May 9, to be known as the "Société Française de Phoniatrie." The officers are Professor Moure, president; Dr. Hautant and Professor Lemaitre, vice president, and secretary, Dr. Tarneaud, 27, Avenue de la Grande Armée, Paris 16.——The International Society of Orthopedic Surgery will hold its second congress in London, July 19-22, 1933. The subjects chosen for consideration are "Mechanism of Articular Movements in General" and "Treatment of Tuberculosis of the Hip." Professor Nové-Josserand, Lyons, France, is president of the congress and Dr. Delchef, Brussels, Belgium, secretary.——The Surgical Society of Egypt was formed at a meeting, April 8, at the Faculty of Medicine, Kasr El Eini, Cairo, called by Prof. Aly Ibrahim Pasha, the dean. This action was prompted by the decision of the International Society of Surgery to hold its next congress in Cairo in 1935. A committee of nine surgeons was appointed to draft statutes for the new society and to represent Egyptian surgeons at the congress.

CORRECTION

Administration of Arsphenamine.—In Queries and Minor Notes, The Journal, June 11, page 2157, appears the statement that 0.85 cc. of tenth normal sodium hydroxide is to be used to each tenth of a gram of arsphenamine. Dr. C. H. McDougall of Washington, D. C., calls attention to the fact that this statement should read: 0.85 cc. of normal sodium hydroxide to every tenth gram of arsphenamine.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 13, 1932.

The Sterilization of Defectives

A conference on voluntary eugenic sterilization has been held by the Eugenics Society. Dr. R. L. Langdon-Down, an authority on mental deficiency, said that it was not easy to determine what proportion of defectives was due to heredity. But even if sterilization could reduce the incidence of defect to only a slight degree, that was sufficient reason for asking that the legal obstacles to voluntary sterilization be removed. Medical opinion was almost unanimous that certain cases of mental deficiency were preventable by this means and by no other. Sir Thomas Horder said that sterilization differed from birth control not in principle but only in efficiency. But in the present state of the law if the operation was performed on other grounds than in the interest of the patient's health, the surgeon would be in danger of an action for damages, notwithstanding that the full consent or even request of the patient was given. The danger would be all the greater if the operation was performed at the request of the patient's guardian.

Mrs. C. B. S. Hodson called attention to the experience of some American states in which sterilization of mental defectives had been carried out for about thirty years. There appeared to be a diminished tendency to promiscuity among those operated on, probably because of careful education in the institutions and supervision afterward. Miss Pocock stated that Alberta, Canada, was the only province in the British empire which had an act authorizing sterilization of the mentally defective. This came into force in 1928 and, by the end of 1931, 106 cases had been presented for sterilization and the operation had been approved in 101.

The British government has appointed a committee of members of the medical profession and others to examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency; to consider the value of sterilization as a preventive measure, having regard to its physical, psychologic and social effects, and to the experience in other countries of legislation permitting it; and to suggest what further inquiries might usefully be undertaken in this connection.

Bill to Increase the Liability of Drivers in Automobile Accidents

The appalling number of road accidents has produced a public outcry, but in spite of recent legislation the government has not been able to do much to reduce the evil. In the House of Lords, Lord Danesfort introduced a bill entitling persons injured on roads by automobiles to recover compensation when they have not themselves caused the accident, without having to prove (as at present) negligence or misconduct on the part of the drivers. He pointed out that more than half the deaths on the road caused by automobiles were those of pedestrians, and many of the victims were children. At present the dice were loaded against pedestrians getting damages, and though insurance companies often behaved generously in the more serious cases they fought in their own interests and raised every possible legal defense. If the pedestrian was killed, the important witness for enforcing the claim was not available, and if he was seriously injured his recollection was probably confused. The difficulty and expense of providing other witnesses had resulted in pedestrians being compelled to accept what compensation the insurance company cared to give. Even if he succeeded in proving negligence on the part of the driver, the pedestrian was then faced with the necessity of rebutting the defense of contributory negligence on his part. If he failed in this, his claim might be rejected entirely. To do justice between drivers and the injured, the defense of contributory negligence should be abolished. Instead of being safe, the highways had become the most dangerous places in the country —infinitely more dangerous than railways.

The lord chancellor said that it was difficult to offer any strong opposition to the bill. Inquiries showed that it would cause a considerable increase in the premiums charged by insurance companies for automobile policies. Another effect would be that unscrupulous litigants would press more claims of an excessive or unfounded nature. For the government, Earl Plymouth, parliamentary secretary to the ministry of transport, said that the bill left the automobile driver with only one line of defense—to prove that the accident was due to the injured party. In every European country except two, other lines of defense were allowed. While not unsympathetic to the bill, the government felt that it had gone too far, but it would not oppose it. The bill was read a second time by a majority of 22 to 8.

Investigation of Cancer of the Breast

Some important conclusions are contained in a report by Dr. A. P. Luff on a collective investigation of cancer of the breast, initiated by the British Medical Association. Physicians were requested to keep a record of all cases that came under their notice during the period of the year ended September, 1930. The object was to obtain precise information as to the previous history, evolution (especially of the first symptom) result of treatment and duration. Reports of 1,651 cases had been received. The following conclusions were drawn. 1. The liability to cancer of the breast is not increased by bearing a large number of children. 2. The proportion of cases is higher in nonparous married women and in single women. 3. A painless lump was the first symptom noticed by the patient in 79.5 per cent of the cases, a painful lump in 8.7, and pain alone in 5.1. 4. Preceding breast troubles (injury, mastitis, abscess, sore nipple and Paget's disease) do not appear to be factors of much importance. 5. Pain was completely absent in two thirds of the cases and was not severe in the great majority of the remainder. 6. Only 23.1 per cent gave a family history of cancer. 7. The complete operation gave much better results than the incomplete. 8. The medullary type was the worst form of the disease. 9. Under 50 years of age, scirrhus is the least common type; over 50, the most common type. 10. Prophylactic treatment with radium after operation exercises a beneficial effect, as shown by the higher survival rate and lower recurrence rate, as compared with patients who either had no prophylactic treatment or prophylactic treatment with x-rays. 11. Prophylactic treatment with x-rays after operation is useless.

An Inquiry into Mass Radiation

The controversy aroused by the decision of the National Radium Commission to withdraw the 4 Gm. radium bomb from use, as the results were not satisfactory, has been previously reported (The Journal, April 2, p. 1197). A conference has been held by leading members of the profession, including the presidents of the Royal Colleges of Physicians (Lord Dawson of Penn) and Surgeons (Lord Moynihan) and members of the commission. The conference unanimously arrived at the following conclusions. 1. The Radium Commission was right in discontinuing the use of the 4 Gm. bomb at the present juncture, though this decision is without prejudice to the question of the therapeutic value of 4 Gm. or even larger aggregations of radium. 2. A fully equipped radium institute is needed in London, where the more difficult and speculative problems connected with radium and ray therapy can be studied by the combined efforts of a trained staff. 3. An expert committee should be appointed, with the following references: (*a*) What is the scientific case for mass radiation by radium and what are its advantages and dangers? (*b*) What are the advantages and risks of massive surface irradiation by radium compared with that of radium needles and radon seeds? The expert committee has been appointed. It consists of two physicists (Lord Rayleigh and Prof. J. C. McLennan) and specialists in the radiotherapy of medicine, surgery and gynecology and in experimental irradiation.

PARIS

(From Our Regular Correspondent)

June 8, 1932.

The Need of Classical Training for Physicians

There is still considerable discussion in high medical and political circles on the subject of the need of requiring students of medicine to possess a knowledge of Latin and Greek. The bill presented to the senate by Dr. Armbruster, senator from the department of Aube, and endorsed by his colleague Debierre, senator from the department of Nord, who has since died, aroused great interest in the medical syndicates; for, demanding, as it does, for admission to the facultés de médecine, the possession of the type of baccalaureate degree that includes Greek and Latin studies, it would tend to limit the number of medical students, eliminating those who have had only a purely scientific training, and also many foreign students. The project would indirectly diminish the crowding of the facultés de médecine. The bill has been passed by the senate but not as yet by the chamber of deputies, in which a new majority, influenced by socialism, has no sympathy for classical culture and is inclined rather to open the way to higher education to the masses who have not as thorough an education and among whom Latin, especially, is regarded as associated with the conservation of the Roman Catholic faith. With the intention, no doubt, of exerting pressure on the sentiments of the new chamber of deputies, which will soon convene, many meetings have been held in favor of Greek and Latin studies as a necessary preparation for the study of medicine. One meeting, which was particularly important, was a public debate, held under the chairmanship of Professor Lépine, dean of the Faculté de médecine de Lyon, in the town-hall of the tenth arrondissement in Paris. Professor Rist, who was the first speaker, upheld the need of a knowledge of Latin, which was the forerunner of French, but Greek he would leave an optional study. Professor Sergent protested immediately, calling attention to the abundance of medical terms derived from Greek roots and emphasizing the great value of Greek roots in forming new medical terms, since a single compound word often takes the place of a long definition. In his opinion, if the physicians approved the suppression of the Greek, the politicians would not hesitate to follow with the abolition of the Latin. Mr. Armsbruster, Mr. Blum, professor at the university, and Dr. Cibrié, secretary of the Union des syndicats médicaux and a delegate of the Société corporative des étudiants en médecine, spoke along the same lines and demanded for the physician the highest intellectual culture possible, in order that he might contend against the moral weakening of the profession in the midst of the so-called realist spirit (but in reality a material and commercial spirit) of the present day. Shortly after this meeting, which appeared to influence public sentiment to a certain extent, the alumni association of the lycées of France and the colonies held its annual meeting at Rochelle. Its members are scattered today throughout many different professions. A similar debate was held, and the meeting pronounced unanimously in favor of making Latin and Greek compulsory requirements for admission to the study of medicine.

Surgical Shortening of the Sound Limb in Coxalgia

The Société des chirurgiens de Paris has heard, of late, many presentations of cases in which a surgical shortening of the sound limb in coxalgia, which operation appears to be coming into favor, was performed. In reality, the operation is not new. It was performed for the first time by Calvé of

Berck, who made a resection of the sound femur in a patient to bring the healthy leg up to the exact level of the leg shortened by coxalgia. The lameness is not totally suppressed, for the operation does not remedy the luxation of the hip; but the operation contributes considerably to the comfort of the patient, since he can walk afterward without an orthopedic device and can enjoy open-air life, which is so necessary for persons convalescing from tuberculosis of the bones. The operation was next performed by Dr. Raphaël Massart in France, and later by Hugo Camera at Turin, in 1931. Massart described to the society the technic of the procedure that he employs, and reported the excellent results that he secured from the operation. He sees only two objections to this form of intervention: the difficulty of inducing the patient to accept the operation, which reduces his height by from 5 to 6 cm., and the risk involved in any surgical operation that is not absolutely needed. Massart first assures himself, by means of careful roentgenologic examinations, of the absolute soundness of the bone that he plans to resect. Preliminary to the operation he disinfects scrupulously the skin of the adjoining area, and performs his resection so that the two bone fragments fit together exactly. A simple metal ring unites the fragments and the limb is placed in an extension apparatus for forty days. The results that he has secured were practically perfect. Mr. Marcel Galland, while approving the method of Calvé, emphasized the fact that absolute correction of the lameness cannot be attained by such an operation.

A New Conception of Mumps

The old conception, dating from Hippocrates, which considered mumps a local disorder—a parotiditis—with various later complications, is no longer tenable. It is evident that mumps is a general infection, which is known to be extremely contagious and which has as its causative agent a specific organism, concerning which, it is true, there is no common agreement. Mr. Philibert, associate professor at the Faculté de médecine de Paris, in an article published in the *Progrès médical,* holds that mumps infection is due to a cytotropic and neurotropic virus comparable to that of rabies. Having penetrated the organism by a route still undetermined (possibly the conjunctiva), this virus reaches, through a process of selection, the nerve centers, provoking in the meninges a more or less intense reaction. If but slightly virulent, it causes only slight and transitory lesions. If more active, it may bring about the destruction of nerve cells, and hence definitive paralysis, which is sometimes observed. From the nerve centers, it is eliminated by the salivary glands, of which it may or may not provoke a swelling and partial destruction; likewise by the pancreas, the testis and the kidneys. To sum up, mumps must be regarded today as a primary neuraxitis, accompanied by secondary lesions of the salivary glands, the pancreas and the testis.

Deaths

The death of Dr. Sherwood Dunn, at the age of 65, is announced. He was a member of the faculty of medicine of Paris and of the University of New York. He had previously served as an associate professor of the University of Boston. At Paris, he was elected a member of the Société de gynécologie et d'obstétrique. During the war, he served as the head of the American Red Cross unit at Amiens, holding the rank of colonel, and was severely wounded at Compiègne. He was awarded the title of Officer of the Legion of Honor. He was medical correspondent, in France, of several American journals. He resided, for the most part, at Nice, where he had founded the American Club.

The death of Mr. Pierre Breteau, as the result of an automobile accident, at the age of 50, is announced. He was a member of the Academy of Medicine, and was professor of chemistry and chief pharmacist at the Ecole militaire du Val-de-Grâce. He was the author of numerous works on the alkaloids, the hematins of the blood, oxydase reactions, and kindred topics.

BERLIN

(From Our Regular Correspondent)

May 30, 1932.

The Swarm of Charlatans in Germany

According to an official survey contained in the *Reichsgesundheitsblatt,* the number of lay practitioners in the German *reich,* during the past two generations, was as follows:

Year	Totals	Females	Per 10,000 Inhabitants	For Each Ten Physicians
1876	670	95	0.16	0.49
1909........	4,468	1,322	0.70	1.46
1927........	11,761	2,832	1.86	2.70
1928........	12,098	2,803	1.90	2.63
1929........	12,413	3,091	1.94	2.61
1930........	12,942	3,094	2.01	2.74

In fact, there were more lay practitioners than these records show. This official report, however, deserves careful study, for it shows clearly the danger that threatens the health of the German people at the hands of charlatans. This report of the federal bureau of health reveals that the charlatans, that is, "unlicensed persons who treat patients as their regular occupation," show an increase of 4.3 per cent over the previous year, whereas the total number of persons engaged in the treatment and care of the sick increased only 0.3 per cent. If the defects and omissions of statistics are taken into consideration, it must be admitted that not nearly all wandering charlatans are included in the foregoing table. In the first place, there is a large number of quacks that failed to register with the police, as they are required to do. Furthermore, there is the immense army of pedlers with charlatanic tendencies, 700 of whom, according to court testimony, were employed by a single firm (the Fi-Sü G. m. b. H., Frankfort-on-Main), which was recently dissolved. Then there are the countless ranters and wandering healers belonging to the associations of charlatans, who, as is not so generally known, constantly lambast in their harangues all scientific medical research, deride the government's administration of medical affairs and, without stint, heap scandalous charges against the German physicians. In the foregoing official table the female lay practitioners are likewise estimated too low, since countless fortune tellers, astrologers and graphologists, who, as is well known, nearly all give medical advice and medical treatment, are not enumerated. Mention may be made also of the countless number of societies that, under the name of organizations or leagues for the care of public health or the promotion of a certain method of healing, carry on the treatment of their sick members as if a social game were involved. But even taking these incomplete statistics, there were, in 1930, in Germany 27.4 charlatans to every hundred physicians. From two other tables published in the *Reichsgesundheitsblatt,* it may be seen that in Saxony there were 1,759 charlatans as against 3,550 physicians (nearly 50 per cent); in Hamburg, 1,119 charlatans as against 1,523 physicians (73.5 per cent). No doubt the distress connected with the bad economic situation, during the past year, has induced more persons than ever to adopt the lucrative occupation of a charlatan, which requires no previous training, no factual knowledge and no material equipment. But the gravest danger does not lie in the increasing numbers of charlatans. The federal government, the legislatures and the general public would get a clearer idea of this menace if, not stopping with dry figures, exhaustive official reports of the disasters caused by charlatans could be published.

Answers to the following questions would be valuable: 1. What callings or occupations did the 12,942 charlatans abandon to take up the occupation of lay practitioners? 2. What is the average occupational training of the charlatans in Germany? 3. What diagnostic and therapeutic methods do they employ? As the health officers (the communal physicians, the district physicians and others) have in their possession the official list of registered charlatans, statistics on their antecedents would not be difficult to secure nor involve much expense. Such an official inquiry would seem to be worth while. Thus far the reichstag has failed utterly in its endeavors to curb the growth of charlatanry.

Progress in Supplying Aid to Tuberculous Patients

As evidence of progress in the supplying of aid to tuberculous patients, it may be mentioned that, according to the reports of the German care-taking centers for the tuberculous, for the fiscal year 1930, as published in the *Tuberkulose-Fürsorgeblatt*, more patients with active tuberculosis have a bed of their own than in previous years. Whereas, as recently as 1925, about 31 per cent of patients with active tuberculosis did not have a bed to themselves, the number has been constantly reduced in recent years, and in 1930 had dropped to 4 per cent. Of 111,000 patients with active tuberculosis, there were only 4,481 that did not have a bed to themselves.

ITALY

(From Our Regular Correspondent)

May 15, 1932.

New Method of Taking Roentgenograms of the Lungs

Professor Torelli communicated recently to the Federazione per la lotta contro la tubercolosi in Rome a new method for the taking of lateral roentgenograms of the pulmonary apexes. In the ordinary lateral roentgenogram, the upper third of the pulmonary field is invisible because covered by the shadow of the shoulder, whereas in the lateral roentgenogram taken by the Borson-Kappenstein method (axilla-shoulder) only the upper part of the apex is visible. With the Torelli method, the patient is placed with the side toward the roentgen apparatus, with the arm of the side to be examined held high above the head, while the shoulder of the opposite side is allowed to droop. The exposure results better if preceded by radioscopy. The cone of rays enters the shoulder of the opposite side, traverses the upper part of the mediastinum, the upper third of the side to be examined, and emerges from the axilla that rests on the apparatus. In the roentgenogram the field of investigation appears as a triangle, the sides of which are formed posteriorly by the shadow of the spine and below by the clavicle of the side to be examined. This exposure is especially valuable in bringing out the cavities of the upper third when the sagittal exposure is not sufficient to secure an accurate cavity diagnosis.

Center for Bibliographic Information

At the Biblioteca Vittorio Emanuele in Rome, the Centro nazionale di informazioni bibliografiche has been established, the object of which is to furnish to Italian and foreign students such information as will aid in their research and to point out the libraries in which they can find the publications and manuscripts that interest them. The organization will also function as an intermediary organization for the exchange of information of a bibliographic nature. The Italian libraries are under obligation to comply with the requests for information submitted to them by the newly established center.

New Sanatoriums

Under the auspices of the Cassa nazionale per le assicurazioni sociali, and for the purpose of promoting the crusade undertaken against tuberculosis, thirty new hospital-sanatoriums are in course of construction, which will have a bed capacity of 9,000. Plans for thirteen more sanatoriums to be located in various regions are being considered, and it is hoped that in 1934 the Consorzi provinciali antitubercolari (provincial antituberculosis societies) will have about 17,000 beds available in fifty hospital-sanatoriums, in addition to the patients enrolled in the village of Abetina di Sondalo, in Valtellina.

Italian Contributions at International Congress of Surgery

At the Congresso internazionale di chirurgia, held at Madrid last March, the Italian surgeons made notable contributions. Professor Lusena of Genoa collaborated on the subject of surgery of the esophagus, speaking on the traumatic lesions and their outcome, lacerations and wounds, traumatic paralysis, burns and cicatricial stenoses. He surveyed the pathology and the clinical aspects of the various types of diverticula, for which he considers the Mayo method the best form of treatment. In esophageal cancer, a resection is technically possible in any segment, but it is difficult to carry out and the percentage of recoveries is low.

Professor Ascoli of Rome presented a paper on "Tuberculous Pulmonary Suppurations." Among twenty-seven cases observed in the Clinica chirurgica at Rome, only one case was postoperative. For the differential diagnosis, the radiologic examination and bronchoscopic examinations are useful. Of the twenty-five patients, three made a spontaneous recovery; thirteen recovered after an operative intervention, and eleven died following the operation.

Professor Dominici of Perugia spoke on intraspinal tumors, reporting the statistics of sixty-three cases of spinal tumors that came to operation in Italy, and emphasized that good functional results were obtained only when the intervention was early; if possible, in the first, preparaplegic stage. In that stage, however, the diagnosis is difficult, owing to the varied nature and slight significance of the symptomatology. In doubtful cases the speaker favors exploratory laminectomy.

BELGIUM

(From Our Regular Correspondent)

May 18, 1932.

Social Insurance

The question of the advisability of enacting a social insurance law is interesting all medical circles and is much discussed at medical meetings. Opponents of such legislation are calling attention to the fact that a plebiscite in Switzerland has definitively condemned social insurance. The Academy of Medicine of Belgium has been studying the question. It has refused to take a stand on the economic and social need of social insurance, contending that it is not qualified to do so. But it considers it a duty urgently to call the attention of the government to the inevitable and profound repercussive effects that social insurance will have on the practice of medicine and pharmacy and on the welfare of patients, and likewise on the professional interests and possibly even on the morale of the medical and pharmaceutic professions. The academy has repeatedly emphasized that if the social insurance law is enacted, provisions must be made that will guarantee to physicians the free practice of their profession, preserve its liberal character in general and maintain intact the right of privileged communication, which is an actual public need. The academy has especially stressed the great importance of special legislative measures that will protect the clinical instruction at the universities. Such instruction would, it contends, be menaced by the creation of hospitals, clinics and other therapeutic institutions that would not be recognized as indispensable.

Enameling and Lead Poisoning

Addressing the Société de médecine et de chirurgie du travail, Mr. Glibert, president of the Comité technique representing the interests of victims of occupational diseases, called attention to the fact that certain enameling processes are exceptionally harmful because the enamels contain lead, since the morbidity is sixty times that of the general average of the industries that expose workmen to lead poisoning. According to the writer, the suppression of the use of lead-containing enamels is feasible and should be done.

Organization for the Promotion of "Social Prophylaxis"

The executive committee of the Fédération médicale belge has decided to create an organization for the promotion of "social prophylaxis." Physicians attached in any capacity to an organization of social medicine are invited to cooperate. It is a question of the forming, under the egis of the Fédération médicale belge, of a section for the study of social medicine, the principal object of which will be to coordinate the efforts of the organizations mentioned with a view to establishing a better prophylaxis of public health. The first questions studied will be (1) the right of privileged communication in relation to social medicine (certificates, inquiries), (2) the collaboration of medical practitioners with medical consultants, and (3) relations between consultants and practitioners from the point of view of treatment.

Cerebrospinal Meningitis in Camps of the Union Minière

In the medical bulletin of Katanga, Dr. Van Nitsen gives an account of the epidemic of cerebrospinal meningitis in the camps of the Union Minière during the period 1925-1930. Cerebrospinal meningitis, which is endemic in Katanga, manifests itself usually in sporadic cases. In 1925 there arose in the camps of the Union Minière a severe epidemic, which lasted through 1926, 1927, 1928 and 1929. In 1930, only rare sporadic cases were noted. The measures adopted to combat the epidemic consisted in preventive vaccination by means of a vaccine prepared from local strains, and hygienic measures looking chiefly toward an improvement in the dwellings of the native workers. These measures had a favorable effect on the epidemic, but it is difficult to say which one exerted the chief influence. The author believes that the results obtained should be attributed to the hygienic measures rather than to the vaccination.

Death of Dr. Heymans

The death of Jean François Heymans, emeritus professor at the University of Ghent, is announced. In Professor Heymans one of the beautiful figures known throughout the extent of international science has passed from the scene of action. His professional career began at Ghent in 1890, and in 1896 he accepted the chair of therapeutics and pharmacodynamics. Professor Heymans founded, thirty-six years ago, in collaboration with Professor Gley, the *Archives internationales de pharmacodynamie et de thérapie.*

The New School Ship

The *Bruxelles médical* publishes an interesting description of the new school ship, designed to replace the *Avenir.* The new ship bears the name *Mercator,* in memory of the eminent Belgian who invented the hydrographic or marine map. This school ship, the plans for which were drawn by Baron de Gerlache, includes a medical department and hygienic improvements that deserve special mention. The spacious hospital quarters are amidships, which assures to patients the maximum of stability. That is one of the desiderata recommended by the Maritime Conference of Geneva and by the Congress of the International Association of Officers of the Merchant Marine. The medical rooms, which are large, well lighted and well ventilated, include a consultation room, an operating room, an infirmary, bathrooms, and a pharmacy. An isolation ward with hygienic equipment is located in the center of the upper deck. All the medical equipment is of Belgian manufacture. Special provision is made for taking on board large supplies of drinking water, which may be three times the minimum required. All the floors will be covered with linoleum, kept clean by a special mopping process. The ancient deplorable custom of flushing the interior of the ship with the hose, a system condemned by all hygienists but which it is so difficult to uproot from a milieu in which the influence of tradition is often paramount, will thus disappear. The bedding will be stowed, during the day, in a special place under the bulwarks, where it can be properly aired and sunned. Shower baths have been provided.

The Association of Clinics

Under the auspices of the Fédération médicale belge, an association of the medical directors or mandataries of clinics and policlinics has been created. The purposes of the association are to (1) strengthen the ties between medical directors or mandataries of the various clinics and policlinics of medicine, surgery and the specialties; (2) apply the adaptation of the rules of deontology and of confraternization to the administration of clinics and policlinics; (3) combat the illegal practice of the art of healing and charlatanism; (4) supply members with literature deemed valuable and useful, and (5) supply the public and the insurance organizations, mutual aid societies, administrations and other groups with a complete list of medical institutions. The researches of the association will have as their chief objectives (1) establishing of ties of solidarity between its members with a view to promoting harmony between the various organizations; (2) adoption of minimum tariff schedules in accord with the Fédération médicale belge, and taking account of the regional needs, and (3) study of the questions that are submitted to it by the executive committee of the Fédération médicale belge.

AUSTRALIA

(From Our Regular Correspondent)

May 16, 1932.

The Third Australian Cancer Conference

At the third Australian Cancer Conference, many facts were brought out. The facilities for the treatment of cancer in Australia have been expanded during 1931 in respect both of accommodation for patients and of additional apparatus for treatment. The use of radon has been extended during the past year. It is now being prepared in Melbourne, Sydney and Adelaide, the year's output being 17,021, 2,040 and 4,200 millicuries, respectively, for each center. This represents an increase of 43 per cent over 1930.

CANCER STATISTICS

In the last three and a half years, to Dec. 31, 1931, more than 9,000 persons have received treatment with radium at the several treatment centers for various malignant and other conditions. The exact number is not known, owing to failure on the part of some of the treatment centers to supply their figures. Of 3,031 patients treated for carcinoma (excluding rodent ulcer) in all stages of the disease in the three years ended June 30, 1931, 2,000, or 36 per cent, are alive and free of symptoms: 22 per cent are known to have died of cancer. Of 1,265 patients with carcinoma classed as operable, 54 per cent are alive and free of symptoms. Only 4 per cent are known to have died of cancer, but in 22 per cent information as to the subsequent history of the patient is not available.

Although the year 1930 showed a decline in the cancer mortality rate for the commonwealth per hundred thousand of mean population, of the total deaths from all causes the proportion that was due to cancer still continued to rise. Thus, among males, one death in every 9.8 and among females one death in every 8.1 was caused by cancer in 1930, this proportion being the highest yet registered in the commonwealth. Neglecting the population under the age of 40 years, in which death from carcinoma seldom occurred, the mortality statistics showed that in males dying after the age of 40 one death in every eight was due to cancer and in females one death in every six. The steady rise in the cancer mortality rate, which was apparent for many years, mainly appears in carcinoma of various organs. The mortality rate from sarcoma is now practically at the same figure that was recorded twenty years ago and has shown relatively little fluctuation in the interval.

As regards regional cancer, mortality from cancer of the tongue in males showed a definite decrease. The rate per hundred thousand of mean population in 1908 was 3.9; in 1930 it was 2.7. Whereas in 1908 one death in every seventeen deaths from cancer was due to carcinoma of the tongue, the proportion in 1930 was one in thirty-five. In females (among whom cancer of the tongue was relatively rare) there was no corresponding diminution in mortality rate, but rather an increase. In no region except that of the tongue did a diminishing mortality rate for cancer appear. In respect of some regions, however, the mortality rate increased much more rapidly than in others. Thus in females the mortality rate from carcinoma of the breast increased at a much faster rate than that for carcinoma of the female genital organs. The region in which the most rapid increase in the mortality rate from cancer occurred was the digestive tract (esophagus to rectum). Here the increase since 1908 was approximately 100 per cent in males and 80 per cent in females. In males, 1 death in every 1.9 deaths from cancer was attributable to cancer of the digestive tract. In females the proportion was 1 in 2.6. In cancer of the skin the mortality rate, which until 1918 steadily rose, has shown since that date a distinct though fluctuating tendency to fall. In 1918 the mortality rate from cancer of the skin was 5 per hundred thousand of mean population. The rate for 1930 was 4 per hundred thousand. The records of cancer treatment centers were kept on uniform lines, enabling the statistical material to be consolidated. The period covered by these returns was only three years, and this period is not long enough to enable detailed conclusions to be drawn as to end-results of treatment. One or two wide facts of interest can, however, be indicated. In a period covering approximately three years to Dec. 31, 1931, the total number of patients treated by means of radium or radium combined with some other method by treatment centers associated with the national organization for the control of cancer in Australia was 9,431. Of these, 4,025 were treated for carcinoma, 3,011 for rodent ulcer, 247 for sarcoma, and 271 for conditions such as endothelioma, melanoma, teratoma and conditions of doubtful malignancy. The remainder suffered from benign tumors or other nonmalignant conditions.

These figures do not include any cases of cancer in the treatment of which radium was not used. Of 3,031 patients with carcinoma treated by means of radium or radium combined with some other method up to June 30, 1931, 36 per cent were alive and free of symptoms at the end of 1931, 22 per cent were known to have died of cancer, and in 17 per cent of cases information as to the end-result was not available. Of 1,265 patients with operable carcinoma, 54 per cent were alive and free of symptoms, 4 per cent were known to have died of cancer, but in 23 per cent of cases the end-result had not been ascertained.

In regard to sarcoma, 45 per cent of the patients with operable and borderline conditions treated during the three years up to the end of June, 1931, were alive and free of symptoms at the end of 1931, whereas, of those with inoperable conditions, 17 per cent remained alive and free of symptoms.

Results of treatment by means of radium and radium combined with other methods were good in the case of cancer of the skin and of the lips and in operable tumors of the buccal cavity, uterus and breast. In a large proportion of cases, however, varying from 29 per cent of patients suffering from cancer of the skin and 30 per cent of those with rodent ulcer to 7 per cent of patients suffering from cancer of the buccal cavity, the end-results of treatment had not yet been ascertained. The information that is being gathered is becoming more accurate, and with greater application in ascertaining the end-results of treatment and with the increasing length of the period elapsing since treatment was given, records will be available of the greatest value in enabling deductions to be drawn as to the true value of the various methods of treatment in cancer of different regions.

CANCER RESEARCH

The most important research work has been carried out at the University of Sydney. There Dr. Warnford Moppett has been investigating the relation between the effects of x-rays on various tissues, including clinical material, and the reaction obtained by him when the chorio-allantoic membrane of the chick embryo is exposed to homogeneous radiations. Experiments carried out illustrate the extraordinary potency of homogeneous radiation. To facilitate the measurement of doses of x-rays, Dr. Moppett constructed a thermo-electrical instrument to record the rise of temperature when radiation is totally absorbed by a bismuth plate. With this instrument the Solomon and international units of x-ray doses have been evaluated in ergs, and variations of x-ray energy dependent on changes of potential and milliamperage have been investigated. Dr. Moppett and Dr. Harker have carried out experiments with sodium iodo-acetate on tumor-bearing mice. They have repeated the experiments of Lundsgaard, who showed that iodo-acetic acid in low concentration, while having little effect on the oxidative metabolism of carbohydrates, exercises a powerful inhibitive effect on the fermentative or glycolytic metabolism. Dr. Moppett and Dr. Harker have given the iodo-acetate orally instead of by injection. They have found that no iodo-acetate is absorbed by the tumors.

Need for an Improved Classification

During the period 1908 to 1923, of 63,148 deaths from cancer in Australia, 26.65 per cent were certified as due to "cancer" without further qualification, 11.74 per cent were certified merely as due to malignant disease, 1.50 per cent as due to malignant tumor, and 0.47 per cent as due to neoplasm. A total of 40 per cent was certified so indefinitely that it was not even known whether the death was from such widely different conditions as carcinoma or sarcoma, except as indicated by the site, and even this was not always indicated. The position is better today but is still bad. What is necessary and has not yet been provided is a uniform pathologic classification for the use of certifying medical officers in the certification of deaths from cancer. This is essential to the proper investigation of cancer.

The international nomenclature of causes of death as amended in 1929 is not satisfactory as regards the classification of cancer. It is realized that a biopsy is almost essential in making a correct certification, and that in many cases, especially in private practice, this is not possible and in certain types of growth is not desirable. It is also realized that a too intricate classification will only cause confusion. It was resolved to appoint a subcommittee to study the whole question.

NOTIFICATION OF CANCER

The question of the desirability or otherwise of making cancer a notifiable disease was discussed at a previous cancer conference, but there had been some divergence of opinion among members. It was decided that steps should be taken to ascertain from the members of the profession throughout the states whether or not the time has arrived to make cancer a notifiable disease. Communications were sent accordingly to the several branches of the British Medical Association asking for the views of the members of each branch on the matter of the notification of cancer. The Queensland, New South Wales, Victorian and South Australian branches were not in favor of notification. The Western Australian branch thought that it was desirable to make cancer a notifiable disease by means of some form of confidential report. No reply was received from the Tasmanian branch.

INFLUENCE OF CONTRACEPTIVES ON THE DEVELOPMENT OF UTERINE CANCER

The influence of contraceptives on the development of uterine cancer had been considered at a previous conference but had been held over pending further investigation. The feeling of this conference was that there was no statistical evidence at present to support such a relationship and that complete statistics were difficult to obtain. In any case, the possible influence was slight compared with that of cervical trauma in parturition and abortion, and cervical infections in the causation of malignant cervical neoplasms. Statistics indicated that the great majority of cases of cervical cancer occurred in married women who had borne children or who, on account probably of some morbid condition of the uterine mucosa, were sterile.

PROTECTIVE MEASURES IN CONNECTION WITH THE USE OF X-RAYS AND RADIUM

The revised international recommendations, as laid down by the third International Congress of Radiology (Paris, July, 1931) had been circularized to all treatment centers. The Australian outlook was that two factors had to be considered: (*a*) the measurement of the radiation intensities and (*b*) the tolerance intensity to which a worker could safely be exposed. It was considered that the best method of measuring the intensity was by the photographic method, and that a fair estimate of the tolerance intensity was 4×10^{-4} r/minutes. Thus in one year of 300 working days a dose of approximately 60 r would be received. As a further precaution, the conference urged the importance of a quarterly exchange of the nursing staff associated with roentgenologic clinics.

Based on the recommendation of the international protection committee that, for voltages of 400 kilovolts peak a thickness of 1.5 cm. of lead or its equivalent should be provided, the walls of a new block that is being built at St. Vincent's Hospital, Melbourne, are being built of barium cement. It has been found by test that a thickness of 10 cm. of such brick is equivalent in protective power to 1.9 cm. of lead. The bricks were made of two parts of coarse barium sulphate, one part of barium flour and one part of portland cement. They were tongued and grooved to prevent joint leakage, and the lead sheeting on the ceiling and sliding doors overlapped the bricks.

TURKEY

(From Our Regular Correspondent)

Ankara, May 16, 1932.

History of the Turkish Red Crescent Society

The conference at Geneva, held Aug. 8, 1864, to which the governments of sixteen countries sent delegates, decided on the basic principles of Red Cross organization. The Geneva convention was signed, Aug. 22, 1864. Twelve months was allowed the various governments for declaring their adherence to the convention. Turkey signed the international agreement, July 5, 1865. The honor of taking the first step toward founding the Red Crescent Society in Turkey belongs to Dr. Abdullah Bey (Hammerschmidt), of German origin, who had spent years in the army medical corps and who attended the sanitary conference in Paris in 1867 as delegate of the Ottoman Empire. On his return, Dr. Abdullah Bey proceeded to the organization of a committee. Numerous were the obstacles. He called on his confrères to form a committee. Only sixty-six persons responded to the call, forty-three of whom were physicians. In July, 1869, the constitution and by-laws of the society were formulated and unanimously adopted by the committee, but the Sublime Porte did not approve of the society under the pretext that the ministry of war regarded it as an encroachment on military affairs. Shortly afterward the second Red Cross conference met in Berlin. The Ottoman Empire was represented by Aristarki Bey, the Turkish ambassador at Berlin, and Husni Bey, military attaché at the Turkish embassy in Paris. Seven years later the Montenegro, Serbian-Turkish war broke out, followed by the war provoked by Russia and Rumania. The reports of the activities the Red Cross societies of neutral countries displayed on the battlefields among the wounded Serbs, Montenegrans, Russians and Rumanians, while the Turkish army was encountering the greatest difficulties in connection with the care of her wounded, at last shook off the indifference which the Sublime Porte had hitherto shown. More than ten years had elapsed since the Sublime Porte had signed the international agreement, but the commanders of the Turkish armies did not even know the purpose and the aims of the Geneva convention. Then Gustave Meunier, president of the international committee of the Geneva convention, wrote to Dr. Peshtemalgian. The contents of this letter were submitted to the imperial medical society, which sent a delegation to Mehmed Rushdi Pasha, the grand vizier. Within a week, a committee was formed at the imperial medical school, where the first meeting took place, July 31, 1876, under the presidency of Marco Pasha, the director of the school.

The question of replacing the "cross" by another suitable emblem was discussed, with the result that the constitution and by-laws of the society were laid down, the organization of a subscription drive was decided on, the members of the administrative council were elected, and a delegation was sent to the war minister. The Sublime Porte asked but one reservation, that the "cross" be replaced by the "crescent" for the Turkish society. The request of the Sublime Porte having been accepted, the war minister approved the society's constitution, and on April 14, 1877, the Ottoman Red Crescent Society was founded. Sultan Abdul Hamid II opened the first session at the Beshiktash palace, thirteen years after the Geneva convention had been signed. The society had been founded on the eve of the Turkish-Russian war (1877-1878) and the armies in Rumania and Anatolia had to be provided with medical supplies. An appeal was made to the public for funds, to the Mohammedans of India and North Africa, and 72,583 pounds Turkish (gold) was realized. When war was over, the sultan, under the pretext that there was no reason for the further existence of the society, ended its activities by depositing the remaining 11,496 pounds at the Ottoman bank. Thus for the second time the society ceased to exist. It was not until 1897, almost twenty years later, that for a short time on the occasion of the Turkish-Greek war the society came back to life. The original founders set to work again. Two hospital ships for the transport of wounded soldiers were equipped and the army was furnished with medical supplies. The minister of finance petitioned the grand vizierate, asking the nomination of a president and additional members with the object of bringing to life the society's activities, but the sultan refused and the end of the Turkish-Greek war was also the end again of the Red Crescent Society. No further activities were possible until the proclamation of the constitution in 1908. In April, 1911, the society was reorganized and placed under the patronage of Sultan Reshad V. The crown prince was chosen honorary president and the society resumed its activities under the name of "Central Committee of the Ottoman Red Crescent," Rifat Pasha, minister of foreign affairs, the president, and twenty-nine members forming the central committee.

It is only since the refounding in 1911 that the Red Crescent Society has had the opportunity to organize its activities unhampered. It has since come to the relief of those in distress in all kinds of local calamities and has been active in meeting part of the needs arising through the Tripoli war of 1911, the Balkan war of 1912, the World War, 1914-1918, and the War of Independence, 1919-1922. When by decision of the great national assembly the Ottoman Empire ceased to exist in 1923, the society's name was changed to "Turkish Red Crescent Society" and in 1925 its headquarters were transferred to Ankara, the capital of the republic.

Marriages

Harold Benjamin Smith, North Wilkesboro, N. C., to Miss Mary McLeod, Cheraw, S. C., June 10.

Clarence Loveridge Robbins to Dr. Marion B. Leonard, both of New Haven, Conn., June 25.

Henry Rostler Bloom, Boston, to Miss Ruth Naomi Elkins of Chelsea, Mass., June 26.

Harry Rosenwasser, New York, to Miss Mildred Boley of Athens, Ga., recently.

Clarence W. Rainey to Dr. Clarissa E. Devney, both of Chicago, April 30.

Charles E. Hall, Jr., to Miss Virginia Manston, both of Atlanta, Ga., June 20.

Edward Berkeley Neal, Douglas, Ga., to Miss Ethel Dickerson, May 28.

Glenn R. Walker, Mobeetie, Texas, to Miss Elise Stiles in Calvert, May 5.

Joseph Cullen Root, Akron, Ohio, to Miss Mary Heppberder, April 28.

Deaths

William Tod Helmuth, New York; New York Homeopathic Medical College and Hospital, 1887; emeritus professor of surgery at his alma mater; fellow of the American College of Surgeons; formerly consulting surgeon to the Flower Hospital and the Broad Street Hospital, New York, New York State Hospital for Crippled and Deformed Children, West Haverstraw, Middletown State Homeopathic Hospital, Middletown, Yonkers (N. Y.) Homeopathic and Maternity Hospital, Jamaica (N. Y.) Hospital, Essex County Hospital, Cedar Grove, N. J., White Plains (N. Y.) Hospital, and St. Mary's Hospital, Passaic, N. J.; aged 69; died, June 15, at his summer home in East Hampton, of nephritis and arteriosclerosis.

Eugene Anthony Crockett ⊕ Boston; Harvard University Medical School, Boston, 1891; formerly professor of otology at his alma mater; member of the American Laryngological, Rhinological and Otological Society, the American Otological Society, and the New England Otological and Laryngological Society; fellow of the American College of Surgeons; served during the World War; on the staffs of the Massachusetts Charitable Eye and Ear Infirmary and the Peter Bent Brigham Hospital; aged 64; died, June 13, in Ipswich, Mass.

Edward Evans, La Crosse, Wis.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1887; member and past president of the State Medical Society of Wisconsin; member of the Western Surgical Association and fellow of the American College of Surgeons; served with the American Red Cross during the World War; formerly member of the board of education, and chairman of the city board of health; regent of the University of Wisconsin, 1902-1914; aged 72; for many years on the staff of St. Francis Hospital, where he died, June 1, of bronchopneumonia, thrombosis and arteriosclerosis.

Charles Rollins Grandy ⊕ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1892; past president of the Medical Society of Virginia and the Norfolk County Medical Society; at one time member of the state board of health; formerly member and chairman of the school board; aged 61; died, June 10, of heart disease.

Amos Jay Hostetler, Lagrange, Ind.; Medical College of Indiana, Indianapolis, 1893; member of the Indiana State Medical Association; past president of the state board of health; member of the school board; formerly proprietor of a hospital bearing his name; aged 65; died, June 12, of progressive muscular atrophy.

Harrie Delmar Handy ⊕ Harwich, Mass.; Hahnemann Medical College and Hospital of Philadelphia, 1893; on the staff of the Cape Cod Hospital, Hyannis; aged 63; died, May 16, in the Massachusetts Memorial Hospitals, Boston, following an operation for vesical calculus, diabetes mellitus and chronic nephritis.

William Broaddus Pritchard, Princess Anne, Md.; College of Physicians and Surgeons, Baltimore, 1884; formerly professor of neurology at the New York Polyclinic Medical School and Hospital, New York; aged 69; died suddenly, June 6, of chronic nephritis and chronic valvular heart disease.

Bascom Franklin Morris ⊕ Tucson, Ariz.; Vanderbilt University School of Medicine, Nashville, Tenn., 1910; fellow of the American College of Surgeons; served during the World War; on the staffs of the Southern Methodist Hospital and St. Mary's Hospital; aged 43; died, June 7, of pneumonia.

Edward Carlin Bennett, Brooklyn; College of Physicians and Surgeons in the City of New York, 1886; member of the Medical Society of the State of New York; formerly on the staffs of the Norwegian Hospital and the Victory Memorial Hospital; aged 68; died, June 5, of heart disease.

Frost Craft Buchtel, Denver; Denver College of Medicine, 1901; member of the Colorado State Medical Society; formerly assistant professor of surgery, University of Colorado School of Medicine; on the staff of St. Luke's Hospital; aged 56; died, May 29, of heart disease.

Henry Blodget ⊕ Bridgeport, Conn.; Bellevue Hospital Medical College, New York, 1881; for many years on the staffs of St. Vincent's and the Bridgeport hospitals; aged 76; died, May 23, of coronary thrombosis, chronic endocarditis and myocarditis.

Joseph Edgar Cook, Cleveland; University of Wooster Medical Department, Cleveland, 1881; member of the Ohio State Medical Association; aged 76; died, May 31, in the Windsor Hospital, of cerebral arteriosclerosis and cerebral hemorrhage.

Jesse B. Munn, Vilonia, Ark.; University of Arkansas School of Medicine, Little Rock, 1899; member of the Arkansas Medical Society; for almost forty years member of the school board of Vilonia; aged 78; died, May 5, of mitral stenosis.

George Foster Comstock ⊕ Saratoga Springs, N. Y.; College of Physicians and Surgeons in the City of New York, 1883; fellow of the American College of Surgeons; surgeon to the Saratoga Hospital; aged 71; died, June 1, of heart disease.

Moses B. Harutun ⊕ Joplin, Mo.; New York University Medical College, 1896; for twelve years commissioner of health and sanitation; aged 65; died, May 19, in a hospital at St. Louis, following an operation for removal of the gallbladder.

Thad Cothern, Jonesboro, Ark.; Memphis (Tenn.) Hospital Medical College, 1905; member and past president of the Arkansas Medical Society; served during the World War; on the staff of St. Bernard's Hospital; aged 51; died, May 17.

Stonewall Jackson Gay, Lineville, Ala.; Southern Medical College, Atlanta, Ga., 1888; member of the Medical Association of the State of Alabama; formerly judge of probate of Clay County; aged 69; died, May 23, of heart disease.

Chambers B. Clapp, Moberly, Mo.; Rush Medical College, Chicago, 1889; formerly member of the school board; for fifteen years president of the Woodland Hospital; aged 73; died, June 12, in a hospital at West Palm Beach, Fla.

John Augustus Leas, Los Angeles; Indiana University School of Medicine, Indianapolis, 1908; member of the California Medical Association; served during the World War; aged 47; died, May 26, of cerebral hemorrhage.

Charles Augustus Leale ⊕ New York; Bellevue Hospital Medical College, New York, 1865; Civil War veteran; first physician to reach President Lincoln when he was assassinated; aged 90; died, June 13, of arteriosclerosis.

Edward J. Brougham ⊕ Chicago; Chicago Medical College, 1887; fellow of the American College of Surgeons; aged 66; on the staff of the Henrotin Hospital, where he died, June 15, of carcinoma of the tongue.

Henry Fleetwood Hoover, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1898; member of the South Carolina Medical Association; aged 56; died, June 4, in the Columbia Hospital.

Omar Hollinger Shively, Campbellsville, Ky.; University of Louisville School of Medicine, 1893; member of the Kentucky State Medical Association; aged 60; died, May 28, of myocarditis and coronary occlusion.

Charles E. Neal, Cincinnati; University of Cincinnati College of Medicine, 1913; member of the Ohio State Medical Association; aged 63; died, May 26, of coronary thrombosis and arteriosclerotic heart disease.

Edward M. Boggess, Elwood, Ind.; Medical College of Ohio, Cincinnati, 1887; member of the city board of health; for eight years coroner of Fayette County, Ohio; aged 69; died, May 31, of carcinoma.

George Conderman, Hornell, N. Y.; University of Vermont College of Medicine, Burlington, 1889; formerly mayor of Hornell; aged 63; died, June 11, in a local hospital, of pneumonia.

Francis Edward Lister ⊕ Faith, S. D.; Medical College of Indiana, Indianapolis, 1892; aged 65; died, May 30, in the Black Hills Methodist Hospital, Rapid City, of peritonitis and shock following an operation for ruptured gallbladder.

Charles Benjamin Bomberger, Mapleton, Minn.; University of Minnesota Medical School, Minneapolis, 1925; aged 32; died, June 7, in Colorado Springs, Colo., of pulmonary tuberculosis.

Eva Elizabeth McKnight ⊕ Oswego, N. Y.; University of Michigan Medical School, Ann Arbor, 1890; obstetrician to the Oswego Hospital; aged 73; died, June 10, of angina pectoris.

Henry Raymond Casgrain, Windsor, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1883; served during the World War; aged 74; died, June 16, of heart disease.

Frederick O. Jackman, Bloomington, Ill.; Chicago Medical College, 1887; aged 73; died suddenly, May 30, at his summer home at Bass Lake, Ind., of cerebral hemorrhage.

Daniel Cessna De Walt ⊕ Houston, Texas; Baylor University College of Medicine, Dallas, 1909; served during the World War; aged 43; died, May 19, in a local hospital.

William Webster Sadler, Hershey, Neb.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; aged 57; died, April 17, of chronic interstitial nephritis.

George Porter Emmons, Lewiston, Maine; Medical School of Maine, Portland, 1885; aged 72; on the staff of the Central Maine General Hospital, where he died, March 27.

Willard Thomas Conley, Dresden, Ohio; Medical College of Ohio, Cincinnati, 1887; aged 70; died, June 11, in the Mount Carmel Hospital, Columbus, of heart disease.

Ira Otis Tracy ⊕ Brooklyn; College of Physicians and Surgeons in the City of New York, 1882; aged 73; died, June 4, at Essex Fells, N. J., of carcinoma.

Charles Walker Mangus, Homestead, Fla.; St. Louis College of Physicians and Surgeons, 1891; aged 72; died, May 17, in Miami Beach, of pernicious anemia.

Walter Clay Sturm, Los Angeles; University Medical College of Kansas City, Mo., 1907; aged 52; died, April 2, of chronic myocarditis and coronary sclerosis.

Daniel Miller Sanger, New Lebanon, Ohio; Long Island College Hospital, Brooklyn, 1882; aged 87; died, May 6, of cerebral hemorrhage and arteriosclerosis.

Albert C. Clark, Woonsocket, S. D.; Chicago Homeopathic Medical College, 1895; aged 62; died, April 26, following an operation for gallbladder trouble.

Calvin W. Bufkin, Runnells, Iowa; Medical Department of Drake University, Des Moines, 1898; aged 60; was accidentally killed, June 11, while hunting.

Frank Summers Thomson ⊕ Dayton, Ohio; University of Louisville (Ky.) School of Medicine, 1888; aged 64; died, May 22, of carcinoma of the lower lip.

Francis Wallace Bruce, Carthage, N. Y.; Medical Department of the University of the City of New York, 1882; aged 78; died, May 16, of heart disease.

M. Jackson Anderson, Tampa, Fla.; Meharry Medical College, Nashville, Tenn., 1897; aged 70; died, May 7, of a ruptured appendix and carbuncle.

Thomas H. Bedford, Meshack, Ky.; Hospital College of Medicine, Louisville, 1875; aged 86; died, April 1, in Tompkinsville, of chronic myocarditis.

Paul Traub ⊕ Trenton, N. J.; Medico-Chirurgical College of Philadelphia, 1899; aged 58; died, June 9, at his home in Beach Haven, of heart disease.

Pierre Anselme Rontey, Coscob, Conn.; University and Bellevue Hospital Medical College, 1909; aged 48; died suddenly, May 13, of heart disease.

William Johnstone Latta ⊕ Wagon Mound, N. M.; Chicago Medical College, 1881; aged 75; died, June 4, in the Valmora (N. M.) Sanatorium.

Elmer A. Blessing, Albany, N. Y.; University of Vermont College of [illegible] 1885; aged 70; died, May 19, of carcinoma of the liver.

Albert P. Minshall, Viroqua, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 70; hanged himself, May 17.

Edward B. Felter ⊕ Plymouth, Wis.; Rush Medical College, Chicago, 1891; aged 67; died, June 8, of pneumonia.

Nicholas John Hamilton, Moline, Ill.; Chicago Physio-Medical Institute, 1886; aged 80; died, May 4, of heart disease.

Correspondence

"CESAREAN UTERINE SUTURES"

To the Editor:—The case report by Dr. Harry S. Fist in The Journal, May 7, page 1635, entitled "Cesarean Uterine Sutures Passed from the Vagina" records an interesting observation but one that bears critical interpretation. Although the patient had a low-grade temperature from 100.6 to 100.8 F. from the second to the seventh day, during which time the lochia were normal, she passed a mass containing the uterine sutures on the eleventh day. This was a necrotic slough. One would like to know how the wound edges were handled before the sutures were placed, whether hemostats or other crushing instruments were used on the uterine incision to control bleeding or to hold the edges in position for suturing.

The indictment of the continuous suture made by the author is not warranted by his single case, as many obstetricians have used continuous sutures with success. I have used continuous sutures consistently for the past five years and have never encountered this complication. Continuous sutures too close or tied too tightly may be a factor in lowering tissue resistance. In regard to Dr. Fist's comment on the integrity of the scar in future pregnancy, I believe that his reasoning is faulty. A wound that heals by secondary intention or granulation results in a *weak scar,* one that is likely to rutpure during subsequent pregnancy or labor. I feel that his patient would entail a serious risk of this accident were she allowed to become pregnant again.

Irving F. Stein, M.D., Chicago.

To the Editor:—I can report a case similar to that observed by Dr. Fist, in which the three undisturbed layers of continuous sutures used to close the uterus were passed in the lochia on the tenth day. The patient made an uneventful recovery, showing no abnormality on examination at six weeks. I do not know whether she had later pregnancies.

The method of handling wound edges makes little difference. It has been a common practice for years, at the Chicago Lying-In Hospital, to compress completely the line of incision in the lower uterine segment by means of modified stomach clamps, to render the operative field bloodless. This I have done many times without regret. Now, however, I first incise the entire length in the lower uterine segment even in the presence of placenta praevia cesarea without first clamping. After delivery of the baby I compress both edges from top to bottom with closely approximated tongue forceps, to close all sinuses and also hold the edges in position for suturing. Never have I seen such temporary pressure in this vascular area affect wound healing.

The use of the continuous suture for years without evident bad results does not justify the assumption that other methods are not better. Many conservative surgeons the world over are discontinuing the locked continuous suture in favor of loosely tied interrupted sutures. I have observed this tendency in numerous operators at the County Hospital in Chicago and elsewhere, showing that others appreciate the dangers of ischemia produced by the continuous suture. For primary union, nature requires merely good approximation of clean edges, without disturbance of circulation.

A weak scar will result if a wound heals by secondary intention; however, world reports show that such a scar in the lower uterine segment entails no greater risk than one in the anterior abdominal wall. Indeed, under certain conditions, spontaneous labor and delivery may be permitted, preferably assisted by episiotomy and early forceps.

D. A. Horner, M.D., Chicago.

[Note.—The letters were referred to Dr. Fist, who writes:]

To the Editor:—1. Wound edges were not traumatized by hemostats or other crushing instruments. The upper and lower ends of the intended incision were delimited and the uterus was steadied by means of two catgut traction sutures, as advised by DeLee and Beck. Thumb forceps were applied gently.

2. Your correspondent makes no indictment of the continuous suture but is now willing to agree with outstanding obstetricians (DeLee, Vaux, Beck) who feel that interrupted sutures are preferable.

3. As to future pregnancy: Elective section for this patient will prevent any danger during labor, and so labor is not discussed.

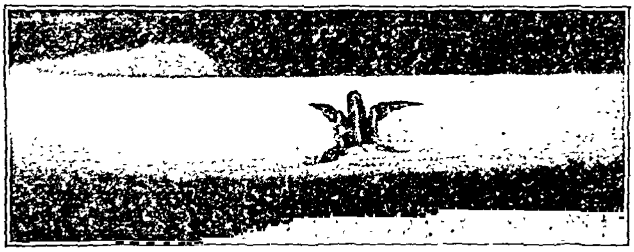
Lack of space prevents lengthy consideration of the prognosis during the prenatal period. This is summarized by the following, quoted from "Cesarean Scars," by Greenhill and Bloom (The Journal, Jan. 5, 1929, p. 21): "In the entire world literature . . . no uterus ruptured during pregnancy" (following low cervical cesarean section).

Harry S. Fist, M.D., Los Angeles.

POSSIBLE CAUSE OF EXPLOSIONS IN GAS ANESTHETIC DEVICES

To the Editor:—Recently a harmless explosion occurred here which well illustrates a possibility about which I have spoken before; namely, that flushing the anesthesia machine with oxygen rather than with nitrous oxide, before all the ethylene and ether have been removed, may lead to an explosion.

The anesthetist had been giving ethylene and oxygen. After the operation was finished, the machine was shoved into a corner. The anesthetist then emptied the bag by bringing pressure to bear on it with her hand, and then flushed the machine with oxygen. She tried to take the inhaler tubing from the machine, and there resulted a quick explosion. This occurred even though our anesthetists have been warned repeatedly against this particular procedure. The enclosed print shows the hole that was made in the breathing tube. In some way or other the ground wire had become disconnected from the machine, so that it was not attached at the time of the explosion. As has been said, no harm was done in this instance because the machine was far removed from the patient.



Hole made by explosion in breathing tube.

On a small scale this illustrates exactly the situation that is being met generally throughout the country when the gas machine is flushed with oxygen instead of with nitrous oxide.

John S. Lundy, M.D., Rochester, Minn.

"NUTRITION AND MILK PRODUCTION"

To the Editor.—I was much interested in the editorial in The Journal, June 4, on "Nutrition and Milk Production," and particularly the losses of calcium and phosphorus during the height of milk production.

In an extended study of this subject with cows it has been fairly well shown that the losses of calcium in the height of milk production is a process that cannot be stopped by high injections of vitamin D. It appears to be a normal physiologic process, no doubt induced purposely by an overactive parathyroid gland, which is known to influence the abstraction of calcium from the skeleton and for the purpose of maintaining the calcium levels of the blood normal during the unusual draft of calcium and phosphorus in mammary secretion.

When the parathyroid fails to function at the initiation of lactation, "milk fever" in cattle results. This can be corrected by the injection of parathyroid hormone. "Milk fever" in cattle is a low blood calcium followed by tetany.

Research Bulletin 112 of the University of Wisconsin College of Agriculture shows that in spite of the mineral losses from the skeleton at the height of lactation, as milk flow recedes with progressive lactation, storage of calcium and phosphorus becomes large. The skeleton is as well mineralized for the next lactation, provided there was a rest period between calves, as in the preceding lactation.

E. B. Hart, Madison, Wis.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NAPHTHA POISONING

To the Editor:—A woman, aged 31, has been employed for fourteen months rolling rings on wet balloons as they return from the dipping room, where they are dipped in naphtha. The symptoms that she presents include dizziness, headache, nausea, tremors of the hands, pain and tingling of the hands and feet, general weakness, malaise, loss of appetite, spots before the eyes, nervousness, irritability, loss of weight, a general run down condition and weak pulse. Examination of the chest is negative for tuberculosis. The heart is slightly enlarged. The pulse is weak and thready. There is a slight anemia. The urine is normal. The blood pressure is 114 systolic and 70 diastolic. The diagnosis is naphtha poisoning. How would this affect the heart and the general condition of the patient? Please omit name. M.D., Ohio.

Answer.—The term "naphtha" is loosely applied to several forms of petroleum derivatives, ranging from the low flash gasoline or petroleum benzin through Stoddard's Solvent. From the point of view of toxicity, the chief differences center about vaporability. Whatever the type may be, the following answer is reasonably applicable.

The vapors of naphtha possess about one half to two thirds of the toxicity of benzene (benzol). The manifestations are much the same except with respect to blood changes; when they are due to naphtha, the blood elements are far less affected than when they are due to benzene. Concentrations of naphtha in excess of 0.45 per cent of the vapors may be expected to produce harm if the exposure period exceeds one or two hours. Concentrations of 2.5 per cent may kill in a few minutes. Mild, acute involvement is well known in industry as a "naphtha jag." All the signs and symptoms mentioned in the query may arise. In addition, in slightly severer form, a bronchitis or other evidence of inflammation of the respiratory tract may arise, including, in rare cases, pulmonary hemorrhage.

At necropsy of animals exposed to naphtha, the heart muscle has been found to be suffused with blood. Granular degeneration of the liver and nephritis has been established.

The chronic form of naphtha poisoning presents profound drowsiness or alternating drowsiness and insomnia, rarely sudden onset of unconsciousness, jaundice or bile in the urine, a mild degree of anemia and leukopenia, loss of weight, increased reflexes, sluggish pupils, and abnormalities of taste. On other occasions, chronic naphtha poisoning resembles multiple sclerosis associated with a hepatitis.

MANTOUX TEST

To the Editor:—Could you inform me as to the value of the Mantoux test? I should be glad if you would indicate by whom it was developed and when. Donald E. Miller, M.D., St. Peter, Minn.

Answer.—The intradermal tuberculin reaction, described independently by Mantoux (*Compt. rend. Acad. d. sc.* **147**:355, 1908) and Mendel (*Med. Klin.* **4**:402, 1908), has been regarded for years as the preferred method. It is more certain of producing a reaction than the simpler Pirquet test, and less objectionable than various other methods.

It affords one of the most certain methods of establishing the presence of a tuberculous infection. This cannot be done, however, without a consideration of age, dosage, condition, and size of a quiescent lesion.

The age of the individual is of importance because a positive reaction in children under 6 years of age usually means an active tuberculous infection. The infection may be chiefly in the lymph nodes, but there rarely has been time for any infection to become quiescent. In an older person a moderate reaction may be present when the tuberculous lesion may be entirely latent without possessing any clinical significance. If the reaction is violent, however (producing a reaction from 1.5 to 2 cm. in diameter), especially with a small dose of tuberculin, it is significant of active infection, even in an adult.

The quantitative aspect of tuberculin is also important. Some begin by using a dosage of 0.01 mg. and stepping up to 0.1 and finally to 1 mg. in 0.1 cc. of saline solution. Usually 0.1 mg. is the starting dose; certainly no more than this should be used in an unknown patient for fear of causing a destructive focal reaction. If this is negative, it is indicative of nothing more, at the most, than a quiescent tuberculosis in the great majority of patients. If 1 mg. is then given and found negative, the test is almost surely negative. In certain rare conditions, such as measles, severe diseases, or terminal or overwhelming tuberculosis, the patients may lose their reactability. In this event it is always well to repeat the test if possible for one or two monthly intervals.

Finally, it is not known with certainty what the least size of a quiescent or latent lesion is that will fail to cause sensitivity. It seems evident at times that there are many small lesions that may not produce a reaction with any size of dosage. Such conditions are, however, not many and are relatively unimportant.

ACNE

To the Editor:—I would appreciate your help in the following case: My daughter has what has been diagnosed by a competent dermatologist as acne, which is mostly on her chin. She is 19 years old and has a strictly negative history in every respect. These "pimples" pop out through the skin at irregular intervals, some of them getting to be half as big as a split pea. Some of them contain pus or a little "core." Sometimes the eruption is worse just preceding menstruation. The menses are regular and there is no cramping. There is a very small enlargement of the thyroid, but it is not toxic. She keeps herself scrupulously clean, and uses a bland soap and face cream. She has taken eight x-ray treatments; she took four, two weeks apart, rested a month and took four more treatments, two weeks apart. This improved the condition for a short time. She also used various sulphur lotions and ointments as prescribed by the dermatologist. She has taken some Finsen light treatments also, which I gave her myself. She eats little meat or carbohydrates. After one of these "pimples" leaves, it leaves a small scar which remains. I have given the patient cod liver oil, also. Please do not publish name or address.

M.D., Indiana.

Answer.—This is the usual history of the adolescent type of acne, which frequently disappears after marriage. The treatment has been along approved lines. Most dermatologists advise an initial course of roentgen therapy in one-fourth skin unit doses once weekly for from eight to twelve weeks. If the acne persists or recurs, roentgen treatment should not be persisted in, and mild ultraviolet treatments may be used as an adjunct. Proper internal treatment and a careful dietetic regimen will control many cases of acne.

In general, an excess of carbohydrates derived from sweets and starchy foods, fats and fried articles should be avoided. It is particularly important not to use iodized salt in cooking. Bromide and iodide tablets and tonics containing iodine may be harmful. An excess of milk is to be avoided. Among the articles prohibited or at least limited are candies, chocolate, ice cream sodas, sundaes, malted milk, rich pastry, mince pie, fresh bread, waffles, griddle cakes, maple syrup, fried sweet potatoes, spices, pork and beans, breakfast sausage, salted nuts, Camembert cheese, Welsh rarebit, and fried foods in general.

The diet should contain an abundance of fresh vegetables, fruits, cereals, plainly prepared meat or fish, and simple desserts. Regularity of meal times and proper chewing of food are essential.

In the care of the skin, massage, facial treatments, face creams and unnecessary manipulation of the lesions must be avoided. A mild superfatted soap should be used daily with warm water followed by cold. If the skin gets dry during a course of treatment, a cold cream may be used at night.

A small percentage of cases can be cured by home treatment with suitable internal and external remedies. Improvement is often slow and uncertain. Yeast has an undetermined usefulness. Mild laxatives should be taken if necessary. Vaccines and serums are occasionally beneficial. Specific instructions for internal medication should be followed.

The object of local treatment is to overcome the excessive oiliness of the skin by reducing the activity of the oil glands and to check the tendency to formation of blackheads and papules. Lotions and salves should be used only when prescribed. Comedones and pustules are best evacuated by the physician using sterile instruments. Modern radiation treatment with roentgen and ultraviolet rays will cure a large percentage of cases if carried out regularly and systematically once weekly for from eight to twelve weeks. Scarring and pitting are minimized by early treatment. Recurrences can be prevented by adhering to a correct diet and by attention to the hygiene and care of the skin.

PARTIAL PARALYSIS AND MUSCULAR ATROPHY AFTER LABOR AND SYMPHYSIOTOMY

To the Editor:—What could be the causes of partial paralysis of the hip and leg following symphysiotomy? A woman of 19 was subjected to this operation as the safest procedure to relieve her of an impacted brow presentation. The symphysis was sutured with heavy absorbable suture, the hips were swathed in adhesive plaster, and she was placed on a Bradford frame for about three weeks. There was paralysis of the bladder necessitating catheterization while she was in bed, but since delivery had been quite difficult this was not thought to be remarkable. At the end of five weeks she began to try to walk with care, and because she complained of right sacro-iliac pain she was fitted with a sacro-iliac belt. But in the following two months she had not improved in her ability to walk. The muscles of the right hip and buttock are painful and show decided atrophy. She drags the right foot in walking and cannot lift it from the bed. The right ankle is very weak and the right knee jerk is greatly exaggerated. The nerve supply of the muscles involved has its origin high above the field of operation. Yet Painter, reporting a somewhat similar case in the *Boston Medical and Surgical Journal*, June 22, 1916, says: "Convalescence was very slow and painful and she experienced great difficulty in walking. She was almost paralyzed in both legs." But how could the operation or the following sacro-iliac strain produce paralysis, especially with atrophy? Could the spinal anesthesia in this case have been a contributing factor? Could a mild diphtheria eight years ago, or an unrecognized poliomyelitis four years ago be possible causes? Would not the exaggerated knee jerk on the affected side indicate a lesion higher up even if there were no other signs or history of such lesion? Even more important, what should the treatment be? Would continued rest for a year be better than encouraged exercise?

Harold C. Miller, M.D., Eglon, W. Va.

Answer.—The paralysis and atrophy probably resulted from pressure on the lumbosacral trunk during delivery rather than being related to symphysiotomy. The sacro-iliac pain is likely due to neuritic symptoms but it is possible that the pain has resulted from sacro-iliac strain during the symphysiotomy. Spinal anesthesia has occasionally produced symptoms of transverse myelitis but is probably not a causative factor in this case. The history of diphtheria eight years previously is not responsible, nor could there have existed a poliomyelitis without producing more evident signs in the light of the present situation. An aggravated knee jerk naturally indicates an upper motor neuron disease, and if that is present in this patient one must naturally suspect a lesion situated in the cord rather than in the lumbosacral roots. In that event one would have to consider the possibility of a localized myelitis.

Rest, in order to avoid fatigue, is an important factor in the treatment, but massage, passive motion and even mild active motion will do more in hastening recovery than mere rest in bed. If a foot drop is present, the foot should be supported by a right angle foot brace to avoid overstretching of the extensor muscles.

TREATMENT OF VAGINITIS

To the Editor.—A girl, aged 5, has a gonorrheal vaginal discharge of one and one-half years' duration. Treatment included serums and irrigations of antiseptics. The discharge has subsided, though not completely. Recently I used Presojod; while beneficial, it has not effected a cure. Smears are positive. What further treatment would you advise? Please omit name and address.

M.D., Pennsylvania.

Answer.—The most important factor in the management of the case is to attempt to locate the source of the gonococci. Careful examination of the urethra, particularly of Skene's tubules, and a vaginoscopic examination by means of an illuminated vaginoscope or female urethroscope. If the infection originates in the cervix, topical applications may be made through the vaginoscope with mercurochrome-220 soluble or weak silver solutions. If Skene's glands are involved, irrigation with 5 per cent mercurochrome solution through a blunt pointed soft silver cannula should be carried out. Good results in these cases have been obtained when using daily instillations into the vagina of 1 per cent mercurochrome ointment (Stein, I. F.; Leventhal, M. L., and Sered, Harry: Cervicovaginitis, *Am. J. Dis. Child.* **37:**1203 [June] 1929). A cure usually is obtained in from ten to twelve weeks by this method if the technic is followed exactly.

IMMUNIZATION AGAINST DIPHTHERIA

To the Editor:—A child was exposed to a case of laryngeal diphtheria by hugging and kissing the child with the diphtheria. The exposed child is 3 years old. Would it be better in this massive exposure to give an immunizing dose of antitoxin or wait and give a large dose of antitoxin if the child developed diphtheria?

L. J. Rutledge, M.D., McComb, Miss.

Answer.—Formerly it was general practice to give an immunizing dose of antitoxin to persons who had been exposed to diphtheria with the idea that it was harmless. It is now known that even a small primary dose of serum may produce alarming and serious reactions. It may also render the individual sensitive to serum administered subsequently. With the multiplication of immunizing and therapeutic serums and their more general use, it has become apparent that hypersensitiveness to subsequent injections of serum should not be established when it can be avoided.

In the case described, it is not at all certain that the second child had received an infecting dose of diphtheria bacilli. The practice followed might well vary with circumstances. If the exposed child cannot be closely watched for the first signs of diphtheria, it would be wise to give an immunizing dose of antitoxin. If, however, the child can be intelligently watched and given a suitable dose of antitoxin at once should signs of diphtheria appear, there would be no disadvantage in waiting. In this way an annoying or serious serum reaction might be avoided, and sensitization to subsequent administration of serum obviated.

ICHTHYOSIS

To the Editor:—My son, who is now 17 years of age, has been afflicted with ichthyosis since 3 or 4 years of age. He is much worse during cold weather. During the summer his skin is soft and does not scale. Local remedies seem to do him no good He complains that baths make him worse. What would you recommend as the best treatment? Would the violet ray do him good? Please omit name.

M.D., Pennsylvania.

Answer.—The chief reason that ichthyosis improves in summer is probably that there is more perspiration then, keeping the skin soft. Measures to increase perspiration should therefore be of some help in the winter. Hot baths or sweat baths followed by a cold douche and a rub, and before the skin is quite dry the application of a bland oil or ointment, should be tried. Soap should be avoided as much as possible. Ultraviolet rays tend to dry the skin. A humid atmosphere within doors overcomes part of the drying effect of winter.

DIAGNOSIS AND TREATMENT OF DIARRHEA

To the Editor:—A man, about 55 years of age, who has never had any previous serious illness, stopped in Iowa to visit relatives, about a year ago, while driving home from Florida While there he had an attack of indigestion, and a physician advised him to use Lacto-Dextrin (Battle Creek). After a few days he developed a severe diarrhea, which he has been unable to control at any time since. This man is a druggist and has taken bismuth, kaolin and opiates without success. What treatment would you suggest? Please omit name and address.

M.D., North Dakota.

Answer.—This case demands a complete diagnostic appraisal, as the causes of diarrhea are varied and many. Before a plan of treatment can be outlined, an attempt at diagnosis must be made. In addition to the history and physical examination, the following studies should be carried out: microscopic, chemical and cultural studies of the stools; secretory function of the stomach, duodenum and pancreas; roentgenologic studies of the stomach, intestine and biliary system. One must make certain that parasitic infestation is not an etiologic factor. The treatment is dependent on the cause.

SPINAL ANESTHESIA IN LABOR

To the Editor:—Please give your opinion on the routine use of spinal anesthesia in normal confinement cases. One of the local physicians injects 100 mg. of procaine hydrochloride into the spinal canal to relieve the pain of the second stage of labor. Many of these cases require several injections of solution of pituitary and low forceps to complete delivery. I have never used this method but the patients say that they feel no pain after the spinal anesthetic is given, and some seem to prefer this method of delivery. Please comment on using spinal anesthesia as a routine in normal cases in the second stage of labor. Please omit name and city.

M.D., Colorado.

Answer.—Spinal anesthesia is becoming safer with the improvements in its technic, but it still has a considerable mortality unless carried out with the most punctilious attention to minute details. This is true of its use in surgery and gynecology but it is more than true in obstetrics. Kroenig of Freiburg, as long ago as 1913, warned that spinal anesthesia was particularly dangerous in pregnant women, and experience in this country, as well as abroad, has justified this prognosis.

At a recent informal discussion by six obstetricians of note, fifteen deaths during delivery, all following spinal anesthesia, were reported as occurring within a few months.

There are safer anesthetics to assuage the pains of the second stage of labor, and spinal anesthesia should not be used as a routine.

ERYSIPELAS

To the Editor:—For two successive years I have suffered from attacks of facial erysipelas. Is there any reliable method of immunization that could be used to prevent or make less likely a recurrence? Please omit name.

M.D., Ohio.

Answer.—Recurring attacks of erysipelas usually start from some focus of chronic infection. This should be sought and, if found, it should be appropriately treated. Immunization with comparatively large doses of a standardized erysipelas toxin has given good results in a small series of similar cases.

MYDRIATIC FOR OPHTHALMIC EXAMINATION

To the Editor:—What would you recommend as a safe and rapid mydriatic for ophthalmoscopic examination of the middle aged and elderly as part of a general medical examination? Would you instil physostigmine (eserine) solution afterward as a precautionary measure against glaucoma? Please omit name.

M.D., Pennsylvania.

Answer.—Probably the simplest rapid mydriatic for ophthalmoscopic examination to the middle aged and elderly is a 2 per cent eucatropine (euphthalmine) solution. It is well to repeat the primary instillation with another drop five minutes later and within fifteen to twenty minutes the pupils will be sufficiently dilated for examination. The subsequent use of a miotic (pilocarpine, not physostigmine) is always a safe measure.

RELATIVE POTENCY OF CODEINE PREPARATIONS

To the Editor:—Please advise me concerning the relative strength of codeine sulphate, codeine phosphate and codeine alkaloid, especially with reference to their use in cough mixtures. Please omit name.

M.D., New Jersey.

Answer.—One hundred grams of codeine phosphate is equivalent to 73 Gm. of codeine; and 100 Gm. of codeine sulphate is equivalent to 80 Gm. of codeine. This means that a dose of the same weight of codeine is about one fourth stronger than the same weight of codeine sulphate and one third stronger than the same weight of codeine phosphate.

TREATMENT OF SOFT CORNS

To the Editor:—In The Journal, April 16, page 1402, was a query regarding the treatment of a soft corn. Soft corns usually occur between the toes near the base, and they may be disabling. Paring and softening with salicylic acid sometimes are not favorable. Corns may be treated satisfactorily, however, surgically.

After injecting well with a local anesthetic under the corn, one can readily remove the corn with a sharp curet such as is used for bone. It may take considerable pressure. The curet should be run around the corn so as to lift it out in one piece. It is surprising how deep some corns are. After the cavity has been touched with an antiseptic solution and simple dressings have been applied, they will readily heal. The pain after removal is less than before. After this treatment, they may not recur. If they do, a curative operation should be done.

Every corn is due to bony pressure either under the corn itself or from an adjacent toe. Palpation will show where this pressure is. Soft corns are frequently due to an overgrowth similar to an exostosis on the side of the metatarsal head. For a permanent cure a small incision should be made so that this projecting bone is exposed and then it can be removed with Rongeur forceps. The corn may or may not be removed at the same time with the curet. Two or three sutures suffice to close the opening, and the corn will be permanently cured.

These operations are described at length in the *Journal of the Michigan State Medical Society* for July, 1930.

J. G. R. Manwaring, M.D., Flint, Mich.

PERSISTENT MASTURBATION

To the Editor:—In the case of persistent masturbation discussed in Queries and Minor Notes (The Journal, April 30) your correspondent is told: "For this type of patient, marriage may be advised as it relieves the tendency to masturbate and would remove temptation of outside coitus with all the serious related possibilities."

This advice raises an important question: Is it ever justifiable to advise marriage as a remedial agent for sexually disturbed men? It is a common practice to recommend marriage in such cases as this, but we must remember that two lives are involved, not only one. Some of the most tragic cases that have come under my observation have been those in which marriage was prescribed as a cure for sexual dysfunction in men.

With all due respect to the authority who proffered this advice, I believe it is *never* justifiable, either in morals or in law. In the case under discussion, this advice seems particularly open to question, to say the least, first, because the man is a persistent masturbator for the pleasure it gives him and he will probably always prefer this practice to normal coitus; secondly, because he is admittedly more or less impotent.

It is true that he has managed to consummate the sexual act twice in the past six years—hardly enough of an achievement on which to base an estimate of his capacity for normal marriage. If he were not definitely impotent (psychically as well as physically), he would have seized on those two high spots in his sexual life and used them as a stimulus for the further substitution of normal coitus for masturbation. But no, he continued his masturbation, which clearly indicates either that he preferred that practice or that he could not accomplish the other.

In any event, with such definite sexual deficiencies, it is debatable whether marriage can be of any help to him, even though one felt disposed to allow a woman to become the innocent victim of the experiment in the fleeting hope that her physical propinquity might possibly stimulate into activity his latent normal sex powers, if there are any.

There is another thing to be said about this case. It is evident that this man is suffering from chronic seminal vesiculitis. I have seen not a few such cases either greatly improved or altogether cured through Belfield's vasotomy. This should be recommended, in addition to the other treatment, which seems to have helped him somewhat. When the man has been cured of his preference for masturbation and his normal potency has been established beyond question, it will then be in order to consider the advisability of marriage—but not till then.

A. L. WOLBARST, M.D., New York.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CONNECTICUT: *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

SOUTH DAKOTA: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

New York February Report

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held in Albany, Buffalo, New York and Syracuse, Feb. 1-4, 1932. The examination covered 9 subjects and included 10 questions. An average of 75 per cent was required to pass. One hundred and seventy-three candidates were examined, 119 of whom passed and 54 failed. Eighty candidates were licensed by endorsement from Jan. 1 to May 1, 1932. The following colleges were represented:

PASSED

College	Year Grad.	Number Passed
Yale University School of Medicine	(1930)	1
Georgetown University School of Med.	(1930, 5), (1931, 5)	10
George Washington Univ. School of Med.	(1929), (1931, 3)	4
Howard University School of Medicine	(1931, 2)	2
Northwestern University Medical School	(1931, 2),* (1932)	3
University of Illinois College of Medicine	(1930), (1931)	2
Tulane University of Louisiana Sch. of Med.	(1928), (1931, 2)	3
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931)	1
Boston University School of Medicine	(1931)	1
Harvard University Medical School	(1928)	1
Tufts College Medical School	(1930, 2), (1931, 2)	4
Detroit College of Medicine and Surgery	(1931)	1
St. Louis University School of Medicine	(1931, 3)	3
Washington University School of Medicine	(1929), (1930)	2
University of Nebraska College of Medicine	(1928)	1
Albany Medical College	(1931, 3)	3
Columbia Univ. Coll. of Phys. and Surgs.	(1927), (1930, 2)	3
Cornell University Medical College	(1929), (1931, 2)	3
Long Island College of Medicine	(1930, 2), (1931, 4)	6
New York Homeo. Med. College and Flower Hosp.	(1931, 3)	3
Syracuse University College of Medicine	(1930, 2), (1931)	3
University and Bellevue Hospital Medical College	(1929),† (1930), (1931, 3)	5
University of Rochester School of Medicine	(1930, 2)	2
University of Oregon Medical School	(1930)	1
Hahnemann Medical Coll. and Hosp. of Philadelphia	(1931)	1
Jefferson Medical College of Philadelphia	(1928), (1929, 2), (1930), (1931)	5
University of Pennsylvania School of Medicine	(1928), (1929, 2), (1930, 2)	5
University of Pittsburgh School of Med.	(1928), (1931)	2
Temple University School of Medicine	(1931)	1
Medical College of the State of South Carolina	(1926)	1
Queen's University Faculty of Medicine	(1928), (1930), (1931)	3
University of Toronto Faculty of Med.	(1923), (1928), (1930)	3
University of Western Ontario Medical School	(1928), (1930)	2
McGill University Faculty of Medicine	(1925), (1926), (1927), (1928), (1929), (1930, 3), (1931, 2)	10
University of Vienna Faculty of Medicine	(1930),‡ (1931)	2
Kings College Hospital Med. School, Univ. of London	§	1
Middlesex Hospital Medical School, Univ. of London	§	1
University of Paris Faculty of Medicine	(1930),‡ (1931)‡	2
Queen's University Faculty of Medicine, Ireland	(1929)	1
University of Catania Faculty of Medicine, Italy	(1921)	1
University of Naples Faculty of Med. and Surg.	(1931)‡	1
Moscow State University Faculty of Medicine	(1920)	1
University of Edinburgh Faculty of Med.	(1931, 4),‡ (1931)	5
Osteopaths		3

FAILED

College	Year Grad.	Number Failed
Georgetown University School of Med.	(1928), (1931, 2)	3
George Washington University School of Medicine	(1931)	1
Howard University School of Medicine	(1928), (1930)	2
University of Georgia Medical Department	(1929)	1
Loyola University School of Medicine	(1931)	1
University of Louisville School of Medicine	(1926)	1
Boston University School of Medicine	(1928), (1930)	2
St. Louis University School of Medicine	(1930)	1
Creighton University School of Medicine	(1930)	1
Albany Medical College	(1931)	1
Columbia University Coll. of Physicians and Surgeons	(1931)	1
New York Homeo. Med. College and Flower Hosp.	(1916)	1
Syracuse University College of Medicine	(1926), (1931)	2
Queen's University Faculty of Medicine	(1930), (1931)	2
McGill University Faculty of Medicine	(1926)	1
Karl Franzens University Faculty of Medicine, Austria	(1905), (1931)	2
University of Vienna Faculty of Medicine	(1926, 2)‡	2
Catholic University of Louvain Faculty of Med.	(1930)	1
Charles University Faculty of Medicine, Prague	(1931)‡	1
German University of Prague Faculty of Medicine	(1925), (1925),‡ (1929)‡	3
Masaryk University Medical Faculty, Cze	(1928)‡	1
University of Berlin Faculty of Medicine	(1929)	1
University of Freiburg Faculty of Medicine	(1926)	1
University of Jena Faculty of Medicine	(1928)‡	1
Royal Hungarian Francis-Joseph University Faculty of Medicine	(1922)‡	1
University of Genoa Faculty of Med. and Surg., Italy	(1930)‡	1
University of Naples Faculty of Med. and Surgery	(1923),‡ (1923, 2), (1927),‡ (1927)	5
Univ. of Palermo Faculty of Med. and Surg.	(1928),‡ (1928)	2
Univ. of Rome Faculty of Med. and Surg.	(1928),‡ (1931)‡	2
University of Cluj Faculty of Medicine	(1926)	1
University of Saratov Faculty of Medicine	(1922)‡	1
University of Berne Faculty of Med., Switz.	(1926),‡ (1931)‡	2
Osteopaths		5

LICENSED BY ENDORSEMENT

College	Year Grad.	Endorsement of
Yale University School of Medicine	(1930)	N. B. M. Ex.
Georgetown University School of Medicine	(1931)	Maryland
Bennett Medical College, Chicago	(1913)	N. Carolina
Rush Medical College	(1929)	N. B. M. Ex.
University of Indianapolis Medical Department	(1897)	Florida
University of Louisville School of Medicine	(1924)	Kentucky
College of Physicians and Surgeons of Baltimore	(1902)	New Jersey
Johns Hopkins University School of Medicine	(1923) (1924), (1927)	N.B.M.Ex., Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1924), (1930)	Maryland
Harvard University Medical School	(1928), (1929)	N. B. M. Ex.
Tufts College Medical School	(1905), (1907) (1925)	Mass., Maine
University of Michigan Medical School	(1916) (1930)	Michigan, N. B. M. Ex.
University of Minnesota Medical School	(1929)	Minnesota
Washington University School of Medicine	(1929)	Maryland
Creighton University School of Medicine	(1929)	California
Columbia University College of Physicians and Surgeons	(1927), (1928), (1930, 2)	N. B. M. Ex.
Cornell University Med. College	(1922), (1929), (1930)	N. B. M. Ex.
Syracuse University College of Medicine	(1930)	N. Carolina
University of Buffalo School of Medicine	(1885)	Diploma
University of Rochester School of Medicine	(1929), (1930)	N. B. M. Ex.
Ohio State University College of Medicine	(1925)	Ohio
Western Reserve Univ. Sch. of Med.	(1924), (1929), (1930, 2)	Ohio
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1931, 2)	Maryland
Jefferson Medical College of Philadelphia	(1899)	Penna.
Medico-Chirurgical College of Philadelphia	(1906)	Penna.
University of Pittsburgh School of Medicine	(1911)	Penna.
Woman's Medical College of Pennsylvania	(1920)	N. B. M. Ex.
Medical College of the State of South Carolina	(1915)	N. Carolina
University of Tennessee College of Med.	(1930, 2), (1931)	Tennessee
Baylor University College of Medicine	(1924), (1926), (1929)	Texas
University of Vermont College of Medicine	(1930, 2)	N. B. M. Ex.
Medical College of Virginia	(1926), (1928), (1929)	Virginia
University of Virginia Department of Medicine	(1926)	Virginia
University of Toronto Faculty of Medicine	(1923) (1926)	Ontario, New Jersey
Laval University Faculty of Medicine	(1931)	Tennessee
McGill University Faculty of Medicine	(1928) (1928), (1930, 2)	Maryland, N. B. M. Ex.
University of Vienna Faculty of Medicine	(1916)‡	Diploma
University of Berlin Faculty of Medicine	(1923)‡ (1925)‡	Illinois, Germany
University of Wurzburg Faculty of Medicine	(1921)	Maryland
Royal Hungarian Univ. of Science	(1914),‡ (1919),‡ (1925)	Diploma
University of Bologna Faculty of Med. and Surg.	(1930)	Utah
University of Naples Faculty of Med. and Surg.	(1921)	New Jersey
University of Rome Faculty of Medicine	(1916)	Penna.
State University of Kazan Faculty of Medicine, U. S. S. R.	(1910)‡ (1907)	Diploma, Turkey
American University of Beirut School of Medicine	(1912)	Syria
Osteopaths		New Jersey, 3

* One of these applicants has received an M.B. degree and will receive an M.D. degree on completion of an internship.

† License withheld for evidence of citizenship.

‡ Verification of graduation in process.

§ These applicants completed their medical course in their respective colleges in 1931.

Medical Economics

AN EXPERIMENT IN COLLECTIVE MEDICAL SERVICE

Results of the First Year of Operation of the Bassett Hospital Annual Payment Plan

G. M. MACKENZIE, M.D.; MARJORIE F. MURRAY, M.D., AND MONROE A. MC IVER, M.D.
COOPERSTOWN, N. Y.

Many traditions apparently firmly rooted in our prewar social organization have been critically scrutinized, attacked, modified or abandoned during the last fifteen years. That the established relationship of the medical profession to the public is one of the institutions that are being subjected to reexamination and criticism is quite clear. The large number of contributions to various phases of this subject in both lay and medical periodicals indicates a widespread and increasing interest in the economic and social implications of medical practice.

Aware of this situation and stimulated by the frequent observation locally of families in the lower economic groups faced with embarrassing indebtedness because of the unavoidably high cost of essential diagnostic and therapeutic procedures, the Mary Imogene Bassett Hospital, at Cooperstown, N. Y., started on Jan. 1, 1931, a small experiment involving the principle of voluntary sickness insurance. In common with the numerous compulsory and voluntary sickness insurance schemes that have been in operation in Europe for many years, the basic idea was to distribute the cost of sickness evenly throughout a group, the individual members of which would require, during the term of insurance, varying amounts of medical attention. In contrast with nearly all the sickness insurance schemes that have been tried, the organization and operation of the Bassett Hospital Annual Payment Plan has been under the direction of a group of physicians. The element of outside official domination by state, municipality or insurance company has been completely absent in this scheme. It is entirely a physicians' undertaking.

THE MILIEU, PROFESSIONAL PERSONNEL AND MEDICAL FACILITIES

Cooperstown is a rural community in Otsego County, N. Y., with a population of 2,909; within a radius of 5 miles there are approximately 2,000 more inhabitants. This group of 5,000 people is composed of farmers, shopkeepers, clerks, skilled mechanics, unskilled laborers, employees of various types, and a few professional men and women. A very small percentage of the population is foreign born. During the summer there is an influx of perhaps 400 to 600 summer residents. The poor people of urban communities with access to low cost dispensaries and wards in city hospitals have far greater opportunities for medical and surgical care at minimal or no expense than the poor of such a rural district as Otsego County. The disadvantage in which individuals in the dispensary and ward-patient groups are placed in rural communities, as compared with a similar economic group in metropolitan areas, was one of the considerations which led to this experiment with the Annual Payment Plan.

The Mary Imogene Bassett Hospital consists of a group of four stone buildings with beds for eighty patients. It is equipped to do nearly all the modern diagnostic and therapeutic procedures, including electrocardiography, basal metabolic rate determination, x-ray diagnosis and therapy, radium treatment and physical therapy, and has laboratories for bacteriology, serology, pathology and biologic chemistry. The staff consists of nine physicians and surgeons, all of whom are on a salary basis, and all have their offices in the hospital. Fees for professional services, either in the hospital or at the patient's home, are collected by the hospital. Three interns, thirty graduate nurses and six laboratory assistants complete the professional personnel. It is a non-profit-making institution, enabled to operate with a deficit because of the generous philanthropy of a resident of Cooperstown. Two physicians not on the hospital staff have their offices in Cooperstown and carry on practices in the village and vicinity. One of these physicians, previously on the hospital staff, resigned his position at the hospital and opened an office for independent practice after the Annual Payment Plan had started. Thus, 90 per cent of the physicians of Cooperstown were on the hospital staff in January, 1931. The work involved in the operation of the Annual Payment Plan constitutes only a small fraction of the medical and surgical activities of the hospital.

PROVISIONS OF THE ANNUAL PAYMENT PLAN

The charges for membership are $25 a year for an individual, and $100 for an entire family of any size. Membership dues may be paid in monthly instalments. In return for this the hospital, through its staff, undertakes, in addition to an annual physical examination, to take care of the members of the Annual Payment Plan in case of any illness, either medical or surgical, without additional charge. The service includes physician's attendance, surgical operations, x-rays, laboratory examinations, ambulance service and medicines, except those administered over long periods of time, such as insulin, arsphenamine and liver extract. In case of admission to the hospital, ward service is provided; if a member of the Annual Payment Plan on admission to the hospital desires a private room, he is allowed a credit of $4 a day; with this deduction the charges for private room service, operations, laboratory examinations and professional fees are computed as for nonmembers. A prolonged illness involves no additional expense for the member up to the date of expiration of his membership. So far as practicable, and in conformity with the departmental organization of the hospital, a member of the Annual Payment Plan may select from the hospital staff the physician whom he prefers. The hospital, through its professional staff, reserves the privilege of deciding whether an illness is to be treated at the patient's home, in the outpatient offices of the hospital, or in a ward of the hospital. Obstetric cases are not included in the Annual Payment Plan service.

COMPOSITION OF THE MEMBERSHIP

In January, 1931, 182 applicants had been accepted for membership. In order to keep the number of members as nearly constant as possible throughout the year, no applicants were accepted after January. Of the 182 accepted applicants, 8 failed to make any payments and were therefore dropped after the first month. During the year 13 members, for various reasons, financial and other, failed to keep up their payments. There were thus 174 members who started and 161 members who continued through a full year. As it was desired not to make the standards of health required for admission too high, a number of applicants with known pathologic conditions were accepted. These were as follows: 16 individuals with hypertension, 3 with marked obesity, and 1 each with tuberculosis of the cervical lymph nodes, hypothyroidism, colloid goiter, secondary anemia, peripheral neuritis, chronic nasopharyngitis, fibromyoma of the uterus, diabetes, postencephalitic syndrome, chronic prostatitis, and rheumatic heart disease. Ten persons with pathologic conditions were accepted with the understanding that medical care for these conditions would not be included in the services under the Annual Payment Plan, but that

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While this report is submitted by three members of the staff of the Mary Imogene Bassett Hospital, the entire staff participated in planning and carrying on the Annual Payment Plan. Miss K. M. Danner, superintendent of the hospital, and Miss Florence Saenger, secretary of the Annual Payment Plan, rendered invaluable service in the administrative work.

everything else would be treated without any charge in addition to the membership fee; this group includes one case each of chronic eczema, hernia, varicose veins, acne vulgaris, chronic arthritis, and deviated nasal septum, and four children needing tonsillectomies.

With regard to economic status, the group was not homogeneous. A large percentage of the members were wage earners with small incomes, school teachers, and elderly people living on small savings; the undertaking was planned primarily for this group of people; a small percentage of the members would be classed as economically in the middle class. Included in the membership there were thirty-eight persons whose memberships were paid for in full and twenty-five persons whose memberships were paid for in part, by employers or by philanthropic citizens. Among these members whose dues were paid by others there were a number of persons who, in case of illness, would have been cared for by the staff of the hospital but who would have been able to pay little or nothing. Lack of information on their financial resources makes it impossible to give exact figures for this group which would have been partially or wholly dependent on charity, but presumably from fifteen to twenty of these members would have been, in case of illness, to some extent dependent on charity.

TABLE 1.—*Membership and Cost of Service by Age Groups*

1 Age Groups in Years	2 Number of Members	3 Percentage Composition of Membership	4 Percentage Composition of Whole Population (U. S. Census 1930) Cooperstown Village	5 Otsego County	6 Cost of Service	7 Percentage Cost of Service	8 Number of Members Not Using Service	9 Number of Members Exceeding $25 Service
1- 4	9	5.2	5.6	7.3	$ 234.50	5.8	2	4
5-14	32	18.3	13.0	16.7	1,055.25	26.2	11	11
15-24	27	15.5	17.9	14.6	391.10	9.7	9	5
25-34	16	9.2	13.6	12.8	565.25	14.0	5	3
35-44	40	23.0	12.5	13.4	598.75	14.8	8	8
45-64	44	25.3	26.7	23.7	1,080.75	26.8	17	7
65-over	6	3.5	10.7	11.5	111.75	2.7	1	1
Totals	174				$4,037.35		53* (30.6%)	39 (22.4%)

* Nine of these members did not complete payments.

The distribution of the membership by age groups is shown in columns 2 and 3 of table 1. For comparison, the percentage composition of the population of Cooperstown and Otsego County in the different age groups is shown in columns 4 and 5. These figures are taken from the U. S. census of 1930. It will be seen that the membership was overweighted in the 5-14 and 35-44 age groups, and underweighted in the 25-34 and the over-65 age groups. In the other age groups the percentage figures for the membership were close to those of the whole population of the community.

The community received information of the plan first by the personal contacts of members of the hospital staff; then at meetings of the Rotary and Exchange clubs short addresses outlining the provisions of the Annual Payment Plan were made by members of the staff. The local papers reported the substance of the addresses and soon the facts were spread about the community. A representative of the hospital called on people said to be interested and offered to give any additional information desired. This representative was careful to state that the hospital did not wish to take as members those who were regular patients of physicians not on the hospital staff, and studiously avoided anything which might be called salesmanship. Following the publication of the news story in the local papers, newspapers throughout the United States received the story from the Associated Press and many of them printed brief accounts of the Annual Payment Plan. A leaflet stating the provisions of the plan was printed and sent to those whose names had been suggested as people who wished detailed information.

AMOUNT AND COST OF SERVICES RENDERED TO MEMBERS OF THE ANNUAL PAYMENT PLAN

In computing the value of services rendered to members of the Annual Payment Plan, the rates prevailing in the community for house and office calls were used. No schedule of fees has been adopted by the county medical society, but the prevailing charges may be stated to be approximately as follows: house and office calls, from $2 up; night calls, $1 additional; out-of-town calls, 50 cents a mile additional. The ward rate of the hospital is $4 a day, with an extra charge only for surgical operations. Fifty-three members (30.6 per cent) had no medical or surgical service during the year. The distribution by age groups of these nonusers is shown in column 8 of table 1. But in this group there were nine persons who dropped out during the year, leaving forty-four (27.3 per cent) members who completed the year without any medical attention. There were thirty-nine members who received medical attention for which they would have been charged more than $25 if they had not been members. The distribution of these members by ages is shown in column 9 of table 1. In columns 6 and 7 of table 1, figures are given by age groups for the cost of services rendered and the percentage for each age group of the total cost of services rendered. These figures show that the 5-14 group was the most costly one to carry. It constituted 18.3 per cent of the membership, and the services rendered to it amounted to 26.2 per cent of the total. The 35-44 group, on the other hand, constituted 23 per cent of the membership and received only 14.8 per cent of the medical services rendered.

During the year the members made 560 calls at the doctors' offices in the hospital, and there were 115 visits by doctors at the patients' homes. There were 381 patient-days for those admitted to the hospital. The computation of the cost of the outpatient work and medical service rendered to inpatients is shown in table 2.

Thus, the total amount that would have been charged for the professional services rendered if the patients had not been members of the Annual Payment Plan would have been $4,037.35. To this should be added, in order to determine the total cost of operating the undertaking, $310 for postage, stationery and secretarial service, and $305 for the admission examinations. Since many of the applicants had recently been patients of members of the hospital staff, the amount of work involved and therefore the amount chargeable against the operating expense of the Annual Payment Plan was less than it would have been if all the applicants had required complete examinations. A proportion of the administrative expense—impossible to calculate accurately—is a nonrecurring expense, occurring only during the first year of operation. The total cost of professional services of all kinds and administrative work, therefore, came to $4,652.35. Against this the total receipts were $3,856.50, which sum was added to the general hospital fund.

TABLE 2.—*Cost of Service Rendered*

Outpatient Service:		
Professional fees	$1,610.00	
Pharmacy	42.40	
Laboratory	145.00	
Diathermy, massage, etc	80.95	
X-rays	177.00	
Radium treatment	40.00	
		$2,095.35
Inpatient Hospital Service:		
Professional fees	$ 714.00	
Room and board (including laboratory, x-ray and pharmacy charges)	1,143.00	
Operating room	85.00	
		1,942.00
		$4,037.35

In computing the cost of operating the Annual Payment Plan, no allowance has been made for bills that would not have been paid. It has been figured as though collections would have been 100 per cent of bills rendered. As the hospital has never for a year averaged more than 75 per cent collections, a deduction of 25 per cent should be made from the figure representing the cost of professional services rendered to members. This deduction amounts to $1,009.34. Among the members there were a number of nearly destitute persons and families whose memberships were paid for by others. In case of illness, some of these poor people would have been ineligible for county aid and would have been cared for by the hospital without any charge. Without making any allowance in comparing the two sides of the ledger for this indeterminate factor, the financial aspect of the experiment may be summarized as in table 3.

TABLE 3.—*Financial Aspect of Annual Payment Plan*

Total receipts from membership dues			$3,856.50
Service rendered	$4,037.35		
Less 25%, bills uncollectable	1,009.34		
		$3,028.01	
Administrative expense		615.00	
			3,643.01

THE DOCTOR-PATIENT RELATIONSHIP; ATTITUDE OF MEMBERS

An argument that has been advanced against the organization of medical practice along the lines of this experiment is that patients will make unreasonable demands on the physician if no extra expense is involved. It has been said that the doctor would be summoned at night or at other inconvenient hours when the patient could easily come to the office during office hours, and that patients would demand admission to the hospital when admission was unnecessary. The experience of one year with this particular group of individuals on an annual payment basis has falsified these predictions. In no instance has the patient made unreasonable demands or attempted to "get his money's worth" when no medical attention was necessary. The physicians on the hospital staff are unanimously of the opinion that there has been excellent cooperation on the part of all the members. Possibly, because it involved no additional expense for the patients, the doctors made a few more visits than they would have made for the same illnesses of nonmembers. That the members feel satisfied with the relationship is shown by the response to a questionnaire that was sent to all the members after the scheme had been in operation ten months. Not only was there no expression of dissatisfaction among the 162 replies received, but nearly all the members wrote that they considered it highly satisfactory. One hundred and thirty-eight reported a desire to renew their memberships; of those who did not wish to continue their memberships, seven had moved away from Cooperstown, eight were undecided because of finances, four preferred commercial sickness insurance—these were all part-time residents of Cooperstown—and one family of five preferred to be cared for by a physician not on the hospital staff.

CONCLUSIONS

It is not our purpose in this paper to argue for or against the organization of medical practice on an annual payment basis. We are fully aware of the multiplicity of factors—psychologic, economic, social, personal—involved in the relationships of the medical profession to the public. We have merely recorded certain facts which have come out of the first year of operation of a small undertaking in collective medical service carried on in a rural community in New York State. They apply only to a particular group of individuals and a particular group of doctors, working under a particular set of conditions which are far from typical.

Book Notices

The Technique of the Non-Padded Plaster Cast. By Fritz Schnek, M.D., First Assistant at the Accident Insurance Hospital in Vienna. With a preface by Lorenz Böhler, M.D., Director of the Accident Insurance Hospital in Vienna. Authorized English translation by Douglas D. Toffelmier, M.D. Cloth. Price, $5. Pp. 139, with 169 illustrations. Vienna: Wilhelm Maudrich, 1932.

For many years the author of this book has been first assistant to Prof. Lorenz Böhler, who popularized the method of treating fractures by reduction under local anesthesia and the immediate application of a nonpadded cast. In the preface, Böhler emphasizes the fact that the treatment of any fracture has two constant requirements; namely, good reduction and uninterrupted fixation until bony union takes place. He explains that many of the poor results that have occurred in the treatment of fractures were due to the fact that casts were applied on limbs with poorly reduced fractures and that faulty technic in the application permitted the fragments to slip, resulting in serious deformities. Schnek considers plaster of paris the best and least expensive material for splinting fractures because of ease of application and stability. The translator worked with the author for two years at the hospital and was therefore able to observe and learn the technic, a description of which he was called on to translate. This is an unusual situation, because most translators perform this work mechanically.

All fractures should be subjected to the roentgen ray immediately after reduction. The strength of the rays should be increased about 10 per cent and the exposure 50 per cent longer than usual when they must penetrate a cast. The nonpadded cast allows for a more even shadow of the bones and soft structures than does the padded cast. Schnek uses a thermophore or a hot-air box on the drying cast. While a cast is hardening it is often allowed to rest on a hard substance, such as the operating table or a chair, thereby causing an indentation which may be harmful.

One of the criticisms of the nonpadded cast concerns the patient's hair. The hair caught in the plaster dies in about three weeks and pulls out of the skin easily. The skin, instead of being bald when the cast is removed, is covered by a new growth of fine, downy hair, which is not adherent to the cast. It is easier to remove a nonpadded cast than one of the padded variety and it is not necessary to wet the cast with water or vinegar. If a cast is causing pressure, removal of all constrictions should restore normal circulation in about ten minutes.

The term "window edema" is used for the condition of swelling that develops through the window trimmed out of a cast. The edema is caused by internal edema of the soft parts pushing the muscles and skin out through the window, where the external pressure has been removed, causing a local edema of the skin. Enlarging the window will not remedy this condition; one must restore the external pressures.

In using plaster cast treatment, the physician is obligated to care for the patient from the time of its application until the time of its removal. All correction of position should be accomplished before the plaster has hardened, to prevent wrinkles on the inside of the cast. This is illustrated clearly by line drawings.

The author defines the duties that plaster casts are called on to perform; viz., general fixation of a portion of the body, maintenance of a definite position of certain parts of a limb, elimination of undesirable muscle movements and stresses, protection of the soft parts involved, aid in the final fixation of the part, and immobilization of infected or clean wounds. He emphasizes the importance of immobilizing the joints above and below an infected region. He quotes Böhler's first law of functional treatment as follows: "Continuous, never interrupted immobilization of all fractured or infected parts, including those adjacent to those joints capable of much movement, is necessary to avoid pain." The two facts that apparently make the padding of a cast necessary are (1) pressure disturbances of the skin and (2) circulatory disturbances. The most striking point in favor of the nonpadded cast is its ability to maintain the fragments in position and allow an early discharge of the patient.

Schnek describes the preparation of a plaster bandage. He uses the plaster splint, reinforcement or "reverse" as the basis of most casts because it can be molded easily to the contour of the part and because it adds greatly to the strength of the cast. The skin is not oiled or shaven. He warns against the danger of circulatory disturbances produced by plaster of paris. The surgeon is responsible for the patient from the time he applies the cast until he removes it. He cautions interns and nurses to be on guard continually for various signs and symptoms of trouble, such as change in color, swelling mobility, sensation and pain. In doubtful cases, the cast should be split or removed immediately. Regardless of the skill and training of the surgeon and assistant, the fresh fracture cases should be seen twice daily. The night nurse should be especially instructed and warned of the danger of negligence. The physician is responsible in court for all surgical accidents.

The dorsum of the toes must remain uncovered to allow their free movement and so that they can be readily observed for circulatory disturbances. A perfectly fitted cast never causes discomfort or pain; hence all complaints should be investigated immediately, windows cut, and pressure restored.

The knee joints should always be fixed in extension, because it is only in this position that the quadriceps muscle can be active and not undergo atrophy.

Schnek advises against the mistake of immobilizing fractures in an overcorrected position. He describes the method of wedging casts to correct the angulation of fragments. Making a walking cast too short is one of the most frequent errors made. It is wiser for the operator himself to hold the leg and allow the assistant to apply the cast. Extension or traction must be maintained until the cast has set. He emphasizes, in hand casts, the importance of free extension and abduction of the thumb and allowing complete flexion of the metacarpophalangeal joint of the little finger. The proximal finger joint should never be held in overextension.

Schnek omits a description of a cast to immobilize the shoulder girdle or shoulder joint because such a cast is of little or no value. He advises an airplane splint either factory made or constructed of Cramer wire by the operator.

Volkmann's ischemic paralysis, he explains, is produced as follows: The arm is markedly shortened and the proximal fragment of the humerus is dislocated anteriorly. The lower jagged edge of the proximal fragment compresses the brachial artery and vein against either of the distal fragments of the forearm bones. At times, the vessels may even be severed by the edge of the humerus. If reduction is attempted by acute flexion at the elbow without longitudinal traction, blood vessels and nerves will be compressed, and ischemia or even gangrene may result even though no cast is applied. If the reduction is accomplished with longitudinal traction on the humerus with the elbow held at a right angle, the vessels will be relieved of compression and normal circulation will be quickly reestablished. A cast applied at this time affords danger other than that attending the treatment of any fracture. The fingers must be watched for cyanosis and secondary swelling of the forearm, and the cast must be split as usual to control it. Volkmann's ischemic palsy, he says, never follows any but a supracondylar fracture and is rarely found following other elbow injuries. In the treatment of flatfoot, in which there is a supination contraction of the forefoot, the forefoot must be pronated in relation to the heel; at the same time it must be slightly adducted.

The exposition is clear and concise. There is much repetition, but it is desirable. In the preface by the translator and the foreword by the author, there are several points of information. The illustrations are mostly reproductions of photographs and diagrams of plaster casts and plaster technic. The author illustrates proper and improper methods. There are many errors in translation, but one overlooks these because the book was written in German and translated and edited in Austria. Regardless of whether the surgeon uses the nonpadded plaster cast or not, the book contains so much good information that it is well worth reading. It should be of value to every general, industrial and orthopedic surgeon and to the nurses and interns connected with hospitals where plaster of paris is used.

What the Public Should Know About Childbirth. By Walker Bourne Gossett, M.D. Cloth. Price, $2. Pp. 290. Minneapolis: Midwest Company, 1931.

This book is introduced with the statement: "This book . . . is a direct result of a paper sometime read by the author . . . on "Problems Pertaining to Obstetrical Practise in Catholic Hospitals." The author has incorporated in the book a chapter on this subject, perhaps the original article itself. Most of the book consists of rather long excerpts from articles written by the leading and lesser obstetric teachers in the country, but there are also citations from Arthur Brisbane and the Chicago *Tribune*. Chapter IX is a complete reprint of an article devoted to frontier nursing. There are two reasons why the book may lead to harm. The outside cover and almost all of the first sixty-three pages repeat the gross falsehood that "the United States is behind at least twenty other countries in its efficiency in the prevention of maternity deaths." That obstetrics in this country can and should be vastly improved is accepted by all, and this statement should be emphasized at every opportunity; but that our maternal death rate is so much higher than it is in countries whose vital statistics are either inaccurate or incomplete is absolutely not true. The author would do well to read Haven Emerson's article entitled "Factors Leading to Misinterpretation of Maternal Mortality Rates" in the April issue of the *American Journal of Obstetrics and Gynecology*.

The second source of harm is the author's insistence that obstetrics should be divorced from gynecology and that cesarean sections should not be performed by obstetricians but by general surgeons. In support of his argument he quotes the following statement from the late Dr. Williams: "One of my former assistants . . . informed me that last year in one of the hospitals in Houston, Texas, 102 cesarean sections were performed. Fifty-two were done by various members of the staff with 18 deaths as compared with 50 performed by himself and his partner with a single death, a mortality of 35 and 2 per cent, respectively." What Gossett does not mention, however, is that the 35 per cent mortality occurred in the hands of recognized surgeons and physicians, whereas the low death rate occurred in the practice of those who specialized in obstetrics. Is any further argument necessary? Gossett also makes the statement that "an obstetrician in his own private practice does not see enough cases that will demand a cesarean section." This surely is a strange sentence when one recalls the large series of cesarean sections reported by Williams, De Lee, Greenhill, Phaneuf and others. It is true that the private practice of these individuals was greatly supplemented by their ward services; but such experience is necessary for all authorities in all branches of medicine.

The material in this book could easily have been condensed into one-fourth the number of pages or less. Parts of the book were more properly written for physicians than for laymen, as for example the chapter on Catholic hospitals. The author misinforms his public when he states that "the sex of the child is already determined in the ova (eggs) in the ovaries of the girl, even before puberty. . . . It is a matter of Providence whether a male or a female ovum (egg) is the one fertilized by the male element." The accepted belief today is that, in human beings, ova are of one kind, whereas the spermatoza determine whether a child is to be a male or a female. When a spermatozoid with twenty-four chromosomes fertilizes an ovum, the child will be a female; whereas when a spermatozoid with twenty-three chromosomes fertilizes an ovum, a male will result.

Urine Analysis. By Byomkes Das Gupta, Bengal Medical Service. Cloth. Price, Rs. 3; 5/-. Pp. 141, with illustrations. London and Calcutta: Butterworth & Company, Ltd., 1932.

The author has been a teacher of medical students. This little volume represents the notes which he has given in lectures and demonstrations to the students on the subject of urine analysis. It was prepared in book form at the request of former students, who desired to have these notes in a handy form to use in practice. The chapters are on physical examination, chemical examination, microscopic examination and special examination. The last chapter, which is brief, takes up four special urine tests. There is an appendix in which the formulas are given for the various reagents used in urine analysis.

A Comparative Study of a Nursery-School Versus a Non-Nursery-School Group. By Ethel Kawin and Carolyn Hoefer. Assisted by Edna Mohr, Maria G. Linder and Marian W. Taylor. Based upon studies made by the Elizabeth McCormick Memorial Fund and the Institute for Juvenile Research assisted by the Behavior Research Fund. Paper. Price, 75 cents. Pp. 52. Chicago: University of Chicago Press, 1931.

The object of this study was to determine whether or not there are measurable differences in growth and development between children 2 and 3 years of age attending nursery schools and children of the same age who do not attend such schools. Psychologic tests, medical examinations and home observations of the children were carried out, while a social history, including a record of environmental factors regarding the home and family life, were obtained. As a result of this study it was found that, so far as physical growth was concerned, the two groups were about equal. Nor was there any marked difference between the nursery school group and the other children in mental growth. However, the nursery school children seemed to show improvement through the elimination of undesirable habits and the acquiring of more good habits. This study is too limited to allow definite conclusions to be drawn as to the results of nursery school training. The workers point out that it is merely a preliminary report to be used in formulating a larger research project.

Électrocardiographie clinique. Par Pierre-Noël Deschamps, médecin-assistant du service de cardiologie à l'Hôpital Lariboisière. Préface du Professeur A. Clerc. Paper. Price, 30 francs. Pp. 192, with 75 illustrations. Paris: Masson & Cie, 1932.

The author is an assistant to Professor Clerc, a recognized authority on electrocardiography in France. The work is a detailed presentation of clinical electrocardiography, tersely written and logically arranged. The experimental basis of the subject is discussed. There is a correlation of electrocardiographic observations with the symptomatology and basic pathology of the various conditions in which graphic methods are of importance in diagnosis, prognosis or treatment. Chapters discussing the value of electrocardiography in prognosis and in the management of acute infections, including acute rheumatic fever, diphtheria and scarlet fever, add materially to the value of the work. The book is well illustrated, most of the illustrations having been taken from more exhaustive publications by Professor Clerc. A carefully selected bibliography is attached, which includes the more important contributions on the subject and gives full recognition to American workers in this field of research. Whereas authorities may find certain statements at variance with their opinions, the clinician who reads French will find here a wealth of dependable information on clinical electrocardiography, which is unusually well presented. The work is a valuable handbook on the subject.

Biochemistry in Internal Medicine. By Max Trumper, Ph.D., Clinical Chemist and Toxicologist, and Abraham Cantarow, M.D., Instructor in Medicine, Jefferson Medical College. With a foreword by Elmer H. Funk, M.D., Sutherland M. Prevost Professor of Therapeutics at Jefferson Medical College. Cloth. Price, $5.50. Pp. 454, with 11 illustrations. Philadelphia & London: W. B. Saunders Company, 1932.

Modern medicine is so complex that the student can digest and use only a fraction of the subjects in the curriculum. Should he possess the ability to retain much of what is taught, it is highly improbable that he would possess also other qualifications that go to make the successful practitioner. For the sane and successful practitioner, dependence must be placed on the average student. Sane and practical training, therefore, should be available for his development. This can be accomplished only by avoiding unnecessary details and emphasizing fundamental principles. With a clear realization of these conditions in mind, the authors have endeavored to bridge the gap between the laboratory and the clinic, and to emphasize the important fundamentals of biologic chemistry as they apply to the practice of medicine. In doing this they have made an excellent selection of subjects and have presented it accurately and clearly. They discuss those parts of biochemistry of value in diagnosis and explain the basis for the tests used. The main subjects discussed are carbohydrate metabolism, with especial emphasis on diabetes; protein metabolism, with emphasis on its significance in nephritis, eclampsia and gout; cholesterol metabolism; chloride, calcium and phosphate metabolism; acid-base balance; basal metabolism; renal and liver functional tests; gastric function and tests; pancreatic function; cerebrospinal fluid and miscellaneous urinary observations. All subjects are treated adequately and clearly, and the meaning of each test is explained so lucidly that the reader may easily obtain an understanding of the chemical changes responsible for the symptoms. The great service of biochemistry to internal medicine is so well presented that it does credit to both these subjects.

Anatomie élémentaire des centres nerveux et du sympathique chez l'homme: Vie de relation et vie végétative. Par P. Gilis, professeur d'anatomie à la Faculté de médecine de Montpellier. Second edition revised by J. Euzière, professeur de clinique des maladies mentales et nerveuses à la Faculté de médecine de Montpellier. Paper. Price, 24 francs. Pp. 234, with 37 illustrations. Paris: Masson & Cie, 1932.

This is a small compendium of elementary facts concerning the central nervous system and the sympathetic system. It cannot be used for either a text or a reference book but might serve the purposes of a student who wishes a bird's eye view of neuro-anatomy.

The Principles of Physical Education. By Jesse Feiring Williams, A.B., M.D., Professor of Physical Education, Teachers College, Columbia University. Second edition. Cloth. Price, $3. Pp. 468, with illustrations. Philadelphia and London: W. B. Saunders Company, 1932.

The second edition of this work has brought it down to date as to facts, tests and figures, but it remains essentially the same as the former edition, a logical, intelligent presentation of the development of a physical education program, the reasons for it, the nature of it, its proper objectives, and its place in the general educational plan. Some would feel that Dr. Williams, in his eagerness to emphasize the value of large muscle activities in education, needlessly minimizes the health values of these activities. No one will feel that he lacks background in the understanding of general educational problems and philosophy of life, or specific knowledge of the history and present status of physical education and its procedures. The book is valuable not only for students and teachers of physical education but also for general educators and school administrators, who should be intelligent about the integration of all organized educational efforts.

Über die neuere Entwicklung der chirurgischen Behandlung der Lungentuberkulose. Von Professor Dr. R. Nissen. Mit einem Geleitwort von F. Sauerbruch. Paper. Price, 6 marks. Pp. 16, with 85 illustrations. Berlin: Urban & Schwarzenberg, 1932.

This monograph from Sauerbruch's clinic deals with the latest developments in the surgical treatment of pulmonary tuberculosis. The indications for and limitations of intrapleural pneumolysis, partial thoracoplasty, and especially plombage, are discussed in relation to partial pneumothorax collapse, to paralysis of the diaphragm by phrenic neurectomy, and to the posterior and combined posterior and anterolateral extrapleural thoracoplasty. Extrapleural pneumothorax following pneumolysis is discussed and the treatment of secondarily infected tuberculous empyema briefly outlined. A test of cardiac function by having the patient breathe air under positive and under negative tension is referred to; mediastinal flutter and wound infection are briefly discussed as the most serious postoperative complications. A short table on end-results is included. The author states that improved technic and clearer cut indications will extend the usefulness of all accepted methods and will prevent failures that result from their improper or incomplete application. The monograph is recommended to all interested in the treatment of pulmonary tuberculosis.

An Elementary Manual of Physiology for Colleges, Schools of Nursing, of Physical Education and of the Practical Arts. By Russell Burton-Opitz, S.M., M.D., Ph.D., Attending Cardiologist, Lenox Hill Hospital, New York. Fourth edition. Cloth. Price, $2.50. Pp. 419, with 147 illustrations. Philadelphia and London: W. B. Saunders Company, 1932.

The publisher advertises that in this edition the author "brought his text immediately up to date, adding much new material." A perusal of the volume revealed that, in addition to two minor changes elsewhere, only one chapter had been revised—the one dealing with the internal secretions. But even this chapter has scarcely been brought up to date, as shown by the retention of the statement that the chief function of the suprarenal glands is to produce epinephrine. The good features of the book have been retained, as there are practically no differences between the successive editions.

Medicolegal

Implied Consent to Examination and Treatment

(Baxter v. Snow (Utah), 2 P. (2d) 257)

Baxter discovered that he did not hear well through his left ear. He was treated by the defendant, an otologist. Subsequently he attributed deafness in that ear to the treatment administered and sued for damages for alleged malpractice. He alleged that he went to the defendant to have wax removed from his ear and instructed the physician to remove the wax and to do nothing more. The physician, however, not only removed some wax, but, finding the drum diseased, he cleansed the ear and inserted a cotton pledget dipped in ichthyol. Baxter alleged that in the course of this treatment a eustachian catheter was passed and that after the catheter was removed he complained to the physician that he, the physician, had made him deaf. He continued under treatment, however, for some time thereafter. The physician testified that during Baxter's first visit he did not use a catheter. The jury rendered a verdict in favor of the patient, and the defendant-physician appealed to the Supreme Court of Utah.

Although the patient alleged in his bill of complaint that he asked the defendant-physician to see only if he had wax in his ear and to remove it and that he instructed him to do nothing more, he did not testify in the course of the trial to the giving of any such instructions. Had he undertaken to direct his physician as to the kind of diagnosis to be made or the manner of making it, or as to the treatment to be given or prescribed, it is likely that his physician—or any other reputable, competent, skilful physician under like circumstances—would have declined to have anything to do with the case. Where, as in this case, a patient who finds difficulty in hearing goes to a physician to ascertain the cause and voluntarily submits to treatment by that physician with full knowledge of what the physician is doing, and acquiesces and consents to all that the physician does, he clearly by implication authorizes the physician to diagnose the case, to discover for himself the cause of his patient's disability, and to give such treatment as in the judgment of the physician is reasonably necessary. Although the patient may have believed that his disability was due to an accumulation of wax in his ear, that belief on his part did not relieve the physician of the obligation to discover the true cause of the disability that he was called on to remedy. Where one has voluntarily submitted himself to a physician for diagnosis and treatment, it will be presumed, in the absence of evidence to the contrary, that what the physician did was either expressly or by implication authorized.

The gravamen of this action, said the Supreme Court, was negligence. No attempt was made by the patient or by any other witness to explain how the plaintiff's hearing could have been or was destroyed by the use of a eustachian catheter. All that the patient said was that he had hearing in his left ear when he got into the physician's chair, that when the catheter was inserted and removed he felt a change in his hearing, and that thereafter he could not hear through that ear. This, he contended, was prima facie evidence of negligence and cast on the defendant-physician the duty of showing that such impairment of hearing as developed during treatment, if any, was not caused through his fault or neglect. Even if it were assumed, however, that that duty was cast on the defendant-physician, it was fully discharged by his showing the condition of his patient's ear when he first examined it; by showing what he did in diagnosing and treating the case; and by showing indisputably, not only by his own testimony but by that of three skilled otologists, that the instruments employed were standard, suitable and such as were generally used by skilled otologists, and that the use of them, as it was indisputably shown they were used, could not have injuriously effected the patient's hearing. All this being undisputed, the jury was not at liberty to disregard it and to render a verdict contrary to it or based on surmise or conjecture. In some cases the opinions expressed by experts are not necessarily conclusive on the jury. The jury may and is permitted to reach its own conclusion on an ultimate fact though such conclusion is adverse to the opinions expressed by the experts. In many cases involving questions of professional skill, however, with respect to which the layman has no knowledge and cannot accurately judge, the jury is not given so wide a latitude. This rule is quite generally applied in actions of malpractice, but not necessarily in all. A treatment may plainly indicate that the physician was negligent and an act shown to have been done or omitted may be such as obviously not to involve professional skill, under which circumstances the opinion of an expert as to the performance or nonperformance of the act is not required. The present case, however, does not fall within this class of exceptions. The trial court erred in refusing to grant the defendant-physician a nonsuit and refusing to direct a verdict in his favor.

The judgment of the court below was reversed and the case remanded for a new trial.

Books as Evidence: Amenities of Witness Stand

(Edwards v. Union Buffalo Mills Co. (S. C.), 159 S. E. 818; Baker v. Southern Cotton Oil Co. (S. C.), 159 S. E. 822)

The South Carolina Code of Civil Procedure, 1922, Section 744, provides that in all actions or proceedings, civil or criminal, in which the question of sanity or insanity or the administration of poison or other article destructive to life is involved and in which expert testimony might be introduced, medical or scientific works, or such parts hereof as may be relevant to the issues, shall be admissible, to be read before the court or jury, in addition to such expert testimony. The fact, says the Supreme Court of South Carolina, that the general assembly found it necessary by a special enactment to authorize the reading of medical or scientific books in cases involving insanity or the administration of poisons or other deadly articles is unanswerable proof of the assembly's intention that such books should not be read to the court or jury in other cases. Such books may be legitimately used by counsel in framing hypothetical questions, but they cannot be used as testimony.

A hearsay statement, according to Corpus Juris, does not become competent by reason of the fact that it is printed, even though it appears in the responsible form of a book, and even though such book is a treatise by an author of standard authority on a scientific subject, such as a medical treatise (22 C. J. 210, 211); nor can the admission of evidence from a medical book be secured indirectly by asking a medical expert whether extracts read to him from such a treatise are accurate statements of the facts (*Davis* v. *State*, 38 Md. 15; *Marshall* v. *Brown*, 50 Mich. 148, 15 N. W. 55); nor is it an available expedient to attempt to corroborate a medical witness by showing that a certain treatise sustains his position (*Fox* v. *Peninsula White Lead, etc., Works*, 84 Mich. 676, 48 N. W. 203; *Huffman* v. *Click*, 77 N. C. 55). ". . . the caution of the courts in admitting opinions which are not based on the observation of the particular facts of the case, the universal requirement that the testimony given to a jury should be under the sanction of an oath, and subject to the test of a cross examination, and the probability of misleading a jury by reading to them general statements to which they are hardly competent to apply the necessary qualifications and distinctions, have led to a more or less general refusal of courts to permit scientific treatises, particularly medical books, to be proved as standard books of authority and extracts therefrom to be used as opinion evidence" (11 R. C. L. 588-89).

Such a practice as having the jurors who are trying a case leave their seats and examine the plaintiff's leg, stick pins into it, etc., makes witnesses out of the jurors and is not to be commended, but in this case the court regarded it as hardly calling for a reversal of judgment. Jurors should occupy a wholly detached attitude.

In the zeal of argument, counsel may say harsh things of witnesses who have testified against his cause, and if there is evidence to support it, allowance may well be made for intemperance of language. There is no palliation, however, when counsel, without foundation in the evidence, asperses the integrity and veracity of respectable witnesses, as in the present case, by suggesting that the medical witnesses for the defendant were liars or men who had been bought, or could be bought, by the defendant's money. Uncalled for personal abuse of a witness by counsel is objectionable and will not be condoned by the court (*State* v. *Kennedy,* 143 S. C. 318, 141 S. E. 559). In an action for personal injuries it has been held to be error for counsel for plaintiff, in alluding to physicians employed by the defendant railroad company to refer to them as "hirelings" and to denounce one of them who was named Arnold as "Benedict" Arnold (*Mott* v. *Detroit, G. H. & M. Co.,* 120 Mich. 127, 79 N. W. 3).

Society Proceedings

COMING MEETINGS

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS

Forty-Seventh Annual Meeting, held at Atlantic City, N. J., May 3 and 4, 1932

(Continued from page 72)

A Study of So-Called Splenic Anemia, and Banti's Syndrome

Drs. C. P. Howard and E. S. Mills, Montreal: The diseases that have been included at one time or another under the term splenic anemia are many and varied. One by one these have been recognized as separate diseases and removed from the parent stock, until at the present time there exists some doubt as to whether there is sufficient left to justify considering the disease a separate entity. Authorities are coming to regard the disease as a collection of symptoms without any histopathologic basis whatever.

During six years, from 1926 to 1931, out of a total of 9,151 medical admissions to the Montreal General Hospital, the diagnosis of splenic anemia or Banti's disease was made in 22 cases. In 14 of these cases a histopathologic study of the spleen was obtained. In the rest, no opportunity for confirming the clinical diagnosis was afforded. The proportion of males to females was 6 to 15, a reversal of the usual sex incidence, but this is hardly significant in a small series. About half of the cases occurred in the third and fourth decades. A family history of the disease was given by one patient. Only one patient showed alcoholism. Onset in 11 cases (50 per cent) was characterized by gastro-intestinal hemorrhages. Laparotomy showed cirrhosis of the liver in only 4 of these. In the other 11, anemia, weakness, fatigue and dyspnea on exertion were present. Three patients complained of pain in the splenic region. In 6 cases the symptoms had been present less than two years. In the rest, it was two years or over. All patients appeared anemic; 2 had jaundice, 3 had ascites. The spleen showed considerable variation in size. The liver was normal in 10 out of 22 cases. The blood picture was constant. Some degree of hypochromic anemia was present, but the red cell count was above 4 million in 9 cases. In sixteen cases there was leukopenia. The plasma bilirubin was increased in 11 cases. Blood platelets were reduced in 14 cases.

The observations lead one to believe that the clinical diagnosis of splenic anemia must depend on a history of unexplained gastro-intestinal hemorrhages, a chronic intractable hypochromic anemia and little but the finding of an enlarged spleen on clinical examination. The hematologic observations are diagnostic. Splenectomy was performed in 11 cases, with 3 fatalities; in the latter, all the patients had cirrhosis of the liver. None of the patients operated on, who previously had hemorrhages, have had a recurrence even after six years. Two had relapses into anemia but responded to therapy.

Dr. Rhea, our pathologist, reports that these spleens are different from cases showing ordinary portal cirrhosis. The venous sinuses of the pulp are dilated, but the pulp is not increased. The more advanced cases progress toward fibrosis. Finally, it seems that in true splenic anemia the reticulo-endothelium of the spleen undergoes physiologic and histologic changes. Removal of the spleen gives relief if it is undertaken early and before portal obstruction has occurred.

DISCUSSION

Dr. Henry A. Christian, Boston: I should like to ask whether splenic anemia and Banti's disease are regarded as synonymous terms or not. I should like to know whether in the title of this paper as published on the program it should be "and" or "or." I should like to ask whether hematopoietic activity was shown as in enlarged spleen with anemia of this type.

Dr. Walter Hamburger, Chicago: I should like to know whether the following type was included in this group: In 1920 Eppinger, from a study of his cases, drew a picture of thrombosis of the splenic vein, with enlargement of the spleen and anemia and leukopenia. This was distinct from Banti's disease, so-called, but on the basis of accessory symptoms the diagnosis can be correctly made. There are a large number of cases in the German, French and Italian literature, but there are few in the American literature. In 1904 Warfield showed extensive thrombosis of the splenic and portal veins. Warfield thought that thrombosis was the essential cause of the condition. I have found three other references. In children, removal of the spleen has seemed to have a beneficial effect.

Dr. Joseph L. Miller, Chicago: The authors said that this disturbance was in the veins coming from the stomach. Now without thrombosis why should the patients have hemorrhage?

Dr. George Blumer, New Haven, Conn.: We have two cases now at the New Haven Hospital. There is a characteristic history of the patients' having had, for several years before admission, a febrile illness and pain in the upper left quadrant of the abdomen. That sign helped to put us on the alert.

Dr. C. P. Howard, Montreal: Many will wonder at our temerity in introducing such a well worn subject. I have had interesting discussions on it with Dr. Krumbhaar. As an old student of Osler I have had a great deal of interest in splenic anemia, and in thirty years of experience I have wavered from one side to the other, and only recently have I been convinced by Dr. Rhea, my associate in pathology, that only a limited group of cases can be really named Banti's disease. The term splenic anemia is fast disappearing from our terminology. Graham's cases of hemolytic jaundice are distinct entities, but there is a small and distinct group that can correctly be called Banti's disease. Clinically we think we can recognize this group mainly by exclusion and by applying modern hematologic methods. Gordon and other workers in Montreal have applied these methods. The cases have been studied both before and after operation. Our clinical reports hinge on Dr. Rhea's pathologic diagnosis. When he says Banti's disease, we are satisfied. There are many who will dispute such a state of mind, but we shall stick to the term Banti's disease for this group of cases. Dr. Miller asks why hemorrhage should occur without thrombosis. Many cases that came to necropsy have shown varices and also dilated vasa brevia, and profuse hemorrhages have occurred, why more than with thrombosis I cannot say. I feel that there is a small group which still must be called Banti's syndrome.

Dr. Thomas McCrae, Philadelphia: Dr. Christian referred to the terminology. Drs. Howard and Mills have used the term Banti's disease. The lesion that Banti described was splenic anemia with secondary portal cirrhosis, but in certain cases the patients may die without portal cirrhosis. Should these be regarded as cases of Banti's disease? Splenic anemia was the term used before Banti's disease, but Banti's lesion included portal cirrhosis. Many of the cases that are diagnosed as Banti's disease are really syphilis of the liver. A distinction should be made between splenic anemia and Banti's disease. If the condition includes portal cirrhosis, it is really Banti's disease.

Dr. W. S. Thayer, Baltimore: Did any of these patients from whom all the spleen had been removed die later with gastric hemorrhage or hemoptysis?

Dr. E. S. Mills, Montreal: Dr. Howard has answered most of the questions. In answer to Dr. Thayer, none of the patients with gastric hemorrhage have had recurrence, and none died. In one case in which splenectomy had been performed in 1927 (a case of Banti's disease) there were extremely large vasa brevia from the spleen to the stomach. The patient was operated on later for pyloric ulcer, which was not present at the time of the splenectomy. We were interested to find that the dilated vessels were now of normal size and that the liver was normal five years after the first operation. I should have mentioned that none of the cases showed thrombosis of the splenic vein. As to the question of terminology. It should be realized that many of the cases originally described by Banti were undoubtedly syphilis. I think the preferable term to use is splenic anemia. We had one splenectomized patient who undoubtedly had syphilis, although sections of the liver at operation and the spleen did not show syphilis.

Treatment of Malignant Neutropenia with Pentose Nucleotides

Drs. Henry Jackson, Jr., Frederic Parker, Jr., F. H. L. Taylor and James Rinehart, Boston: There are a variety of ill defined clinical conditions of unknown origin that are termed leukopenia. These are accompanied by a grave prognosis. Two types may be noted: (1) the agranulocytotic angina described by Schultz and (2) the type with overwhelming sepsis. A great number of remedies have been suggested for treatment, and a few have been successful. Derivatives of nucleic acid have the power to raise the peripheral white blood cell count, just why is not clear. In 1922 one of us (Jackson) isolated pentose nucleotides from normal blood. As their presence is demonstrable in normal persons, I tried treatment of leukopenia with this substance. The treatment has been used by different physicians in different parts of the country. Intramuscular injections of 10 cc. of solution of nucleotides twice daily were given, until improvement was shown; that is, until the white blood cell count had been normal for three days. Other forms of treatment were purposely omitted. Of fifty-eight patients treated, forty-one recovered (71 per cent). In a former untreated series, we had 80 per cent mortality. The etiology in the treated series was as follows: benzene poisoning, two cases, 100 per cent recovery; sepsis cases, thirteen, with 85 per cent recovery, and agranulocytic angina, forty-three cases, with 65 per cent recovery. In one severe case of bilateral pneumonia with a leukocyte count of 200, the patient recovered. The leukocyte count begins to rise about the fifth day and is progressive thereafter. This is about the time of hematologic regeneration shown with use of liver extract.

The Treatment of Granulopenia with Nucleotide Derivatives

Drs. James S. McLester, Birmingham, Ala., and W. H. Parsons, Vicksburg, Miss.: Two patients with granulopenia were treated with the nucleotide derivative adenine sulphate. The illness of one of these was acute and stormy; that of the other, chronic and long drawn out. Both patients showed immediate and marked improvement on receiving intravenously 0.5 Gm. of the drug daily. Both recovered.

DISCUSSION

Dr. Paul Reznikoff, New York: I have studied certain cases, some of which were definite agranulocytosis. In some there was a question whether the diagnosis should be aleukemic anemia. In some, arsphenamine therapy was used. Of thirteen patients, ten recovered, or 77 per cent. Usually the response takes place within forty-eight hours in all acute cases. The second point is the use of solution of epinephrine. With two exceptions there was no reaction. The objection is that it is rather insoluble. I agree with the authors that a great many spontaneous recoveries occur. I think that three of my patients were showing a beginning recovery before epinephrine was given. In clinical work one is dealing with contradictory evidence. I think that agranulocystosis must be produced experimentally in animals before the point can be proved.

Dr. F. G. Blake, New Haven, Conn.: One point of difference is in time response as shown by Dr. Reznikoff to be forty-eight hours and by Dr. Jackson and his co-workers to be five or six days. Have the latter observed a well defined response in that time? Several patients whom I have treated are included in their response. Our initial response is forty-eight hours, at which time young granulocytes appear in the blood.

Dr. Joseph L. Miller, Chicago: Have Dr. Jackson and his co-workers noted any disturbing reaction, such as thrombophlebitis, after intramuscular injection of nuclein?

Dr. F. W. White, Boston: The significance should be realized of the contribution made by Dr. Jackson and his co-workers. If one can take a clean chemical substance made synthetically and cause a drift of differentiated cells manufactured in the bone marrow toward polynuclear cells, it is a matter of great importance. If a chemical substance of known composition can be introduced into the body when there is a lack of that substance which acts as a catalyst, a means is afforded of affecting clinical phenomena in which the lack of a certain substance is the cause of the condition. If one can succeed in adding a clean chemical substance to influence the underlying chemistry of differentiation of cells, an advance has been made toward understanding the processes that go on in the body.

Dr. Henry A. Christian, Boston: Biologic factors have an influence in this problem. There are two fundamental disturbances which precipitate this sudden calamitous development. Have these individuals a deficiency in the hematogenous apparatus? Are they abnormal in this respect always, and do they respond in an unusually violent way to some slight factor or is it a disease factor in which the cause is some virulent organism, which gets an opportunity to develop in some entirely normal individual? In other words, are we dealing with a type of general condition in familial blood disease, or are we dealing with a peculiar form of infectious disease? I had the misfortune to have such a case develop in a house officer. He apparently responded in a peculiar way to infection. He had had his tonsils removed at the Mayo Clinic. Next day he had a condition which made it doubtful whether he had scarlet fever. He was desperately ill, had a rash, and temperature of 105 F., although the lesion in the throat was only a minor infection. The terminal illness started as a streptococcal tonsillitis. There was a great drop in leukocytes. He gave little or no response to the material furnished by Dr. Jackson. He died in four days. It looks to me as if there is something fundamentally important in this disease that no one knows about. I should like to ask the readers of papers what their conception is of this condition: Is it something that occurs suddenly or is it a chronic potential disturbance made possible by a cause which would be slight in a normal individual?

Dr. Eugene S. Kilgore, San Francisco: A woman, now 62, has been observed five or six years and always has a white cell count between 1,200 and 1,800; about 50 per cent are polymorphonuclears, and all cells, both red and white, appear normal. She has passed through several mild respiratory infections without mishap. Has Dr. Jackson any experience in the treatment of such chronic leukocytopenia?

Dr. Henry Jackson, Jr., Boston: We had one patient who had had vaccine prior to this illness. We had four altogether; one had had typhoid. One boy had sore throat and received toxin-antitoxin. He had a temperature of 105 F. The illness lasted thirty-five days and the leukocyte count was 1,000 most of the time. In regard to Dr. Reznikoff's question of dosage, our own dosage is entirely empirical. Why we chose 0.7 Gm., I don't know. I think the dose should be increased. In the case to which Dr. Miller referred, the small dose produced no effect and the larger dose brought about recovery. In one case of gangrene of the arm there was the same condition. We used the larger dosage with improvement. The case cited by Dr. Kilgore was chronic. Another such case occurred in a school boy, who has to keep up a regular dosage if he wants to keep up with his work in school. If he fails with one dose he has to give up his work. The leukocytes fall below 1,000. In some cases this is a cyclic phenomenon. It is a chance whether improvement and dosage agree. Unfortunately, we have had only a few smears to study, so we have had to take evidence of clinical improvement rather than proof by smears. As to time of reaction, we have seen an occasional young polymorphonuclear cell in forty-eight hours. Dr. Miller asks if we have seen reactions. Unfortunately we have. One lot of solution of nucleotides on the market gave severe reactions, but it has been eliminated.

In regard to thrombosis following the chemical, I know the case referred to by Dr. Miller. This interesting fact emerges: As the white cell count rises, in many cases there develops rather suddenly a septic process, such as ischiorectal abscess, or empyema. The infection has been present but the clinical manifestations are not possible in the absence of white cells. An abscess cannot develop without pus. As to the cause of the disease, I do not think we can answer Dr. Christian's question as to what true agranulocytic angina is. I think it should be differentiated from the type of disease following infection.

The Treatment of Purpura Hemorrhagica

Drs. Harold W. Jones and Leandro Tocantins, Philadelphia: The title "purpura hemorrhagica" is chosen rather than "essential thrombocytopenia," which, we think, is an erroneous term. We have observed cases in common with others in which the platelets are normal and yet hemorrhagic phenomena are present. The essential feature of this disease is not platelet reduction but capillary hyperpermeability or a combination of the two. The bleeding time is the most suitable index of this disease. In a consideration of treatment, bleeding time should be taken as an index of improvement, or at least control. This study includes fifty-three patients. In a discussion of the treatment, the spontaneous cure must be given a prominent place. Ten of our patients were of this type. The acute fulminating case, whether it is primary or an acute exacerbation of the chronic, is a true emergency. Transfusion is almost a specific in these cases. Small amounts should be used, varying from 100 to 300 cc. at intervals of from one to five days. Some cases require as many as three transfusions in twenty-four hours in order to control the bleeding time. Transperitoneal transfusions are not effective. If the transfusion is not skilfully given, a reaction may occur. Large transfusions are contraindicated in most cases. A transfusion should not be left to be performed by an intern. After the patient has been brought to a safe level by the use of transfusion, focal infection should be removed and other forms of treatment instituted, such as high protein, high vitamin diet, viosterol and ultraviolet irradiation. In cases in which these methods fail, splenectomy may be resorted to. However, most of the cases respond to medical treatment. In our group only five patients received splenectomy. One death occurred. Splenectomy is not always successful. One patient, after splenectomy, failed to show the usual increase in platelets, and hemorrhagic phenomena recurred. These we have been able to control by the use of diet, viosterol, ultraviolet rays and iron. Ligation of the splenic artery has been used in thirty-four patients, two of whom have died. The spleen decreases in size. Neither necrosis nor infarct occurs. The results with this method are a little slower but just as satisfactory as with splenectomy. The operation is performed with less danger to the patient. We feel, however, that none of the treatment suggested is entirely satisfactory. The disease has much in common with pernicious anemia. Not many years ago we were discussing pernicious anemia from the same standpoint, that is, spontaneous recovery, the fact that most of the cases occurred in the spring, that many modes of treatment benefited, that splenectomy was beneficial and that transfusions helped not a few. We conclude that this disease is a deficiency disease occurring in an individual with a constitutional defect, the acute phase of which may be precipitated by some infectious process or some agent which acts in a similar manner; and we again wish to draw attention to the fact that capillary hyperpermeability and altered bleeding time are more essential features than platelet deficiency.

DISCUSSION

Dr. Augustus Wadsworth, Albany, N. Y.: I should like to know to what extent this is attributed to an infectious process. Focal infection was mentioned. I recall a case of purpura in which the focal infection was a streptococcic abscess in the kidney which had lasted for twelve years. The patient was well except for the purpura. The diagnosis was made by examination of the urine. We recovered the streptococcus and I prepared a vaccine by growing the organisms in albumin blood broth, separating the cells from the toxin. The condition cleared up under vaccine inoculations. Later the patient was operated on for abscess and stone in the kidney. This reveals the striking action of streptococcus toxin in the tissues.

Dr. W. L. Moss, Athens, Ga.: I had a case in my family in 1929. I was requested by a physician to see my sister-in-law, who had acute hemorrhagic purpura. I think the diagnosis was clear. There had been purpuric manifestations for one month. She was very ill with extensive purpura, and bleeding from the mucous membranes of the mouth, tarry stools and constant vomiting. Platelets were nearly absent. I gave a transfusion of 250 cc. intravenously. The bleeding from the mucous membranes decreased. The bleeding time came down from thirty minutes. The hemorrhagic manifestations ceased in five days. A curious mental complex developed. She was disoriented and unable to speak. There were no hemorrhages in the eyegrounds. Lumbar puncture showed red blood cells in the spinal fluid. The fluid was xanthrochromatic. I thought there had been evidence of hemorrhage into the cerebral cortex. Roentgenograms of the teeth showed two abscesses. Two teeth were extracted, removing pus. I talked with Dr. Minot about the condition and he advised liver therapy. In half a day the platelets returned. The patient went home well. Later the platelets again disappeared from the blood, but without return of symptoms. I consulted Dr. Minot again, and he said to give more and better liver therapy. However, she did not get any more liver; nevertheless the platelets returned spontaneously.

Dr. Joseph L. Miller, Chicago: Acute purpura hemorrhagica often occurs in epidemic form in the spring, about the time of acute rheumatic fever. I used to see three or four cases every spring, without rheumatic involvement. I began to use from 50 to 60 cc. of normal blood subcutaneously twice a day, and the cases cleared up promptly. I wonder whether blood given intramuscularly would not be as good as intravenously.

Dr. Henry A. Christian, Boston: I should like to know what happened to the spleen when they ligated the splenic artery.

Dr. H. W. Jones, Philadelphia: There is a striking relation between acute and chronic foci of infection in these cases. It would seem as if acute tonsillitis, erysipelas or other acute infections immediately precede the purpuric phenomena. We have tried to make a vaccine of toxins. I think it would be interesting to try this treatment. I think there is a place for this type of therapy. Removal of infectious foci, after the hemorrhagic phenomena have been controlled, is essential to prevent recurrence. The epidemic form of this disease I would call seasonal. In normal students, the reaction to the capillary test in springtime shows that there is at this time a tendency to hemorrhagic phenomena as regards capillary permeability. Dr. Christian asks what happens to the spleen after ligation. Thirty cases have been reported in the literature, with three deaths. The spleen becomes reduced in size. Thrombosis does not occur. Reduction in size is at the expense of the pulp. There are no infarcts and no bad results. The operation is easier to perform than splenectomy. Sometimes handling of the spleen starts symptoms. I do not know any form of treatment that can be called ideal. One worker has advocated antivenin of the South American type. This controls the capillary resistance. These patients have improved. Dr. Dochez worked with minute doses of moccasin venom. All remarks on treatment have to be weighed in regard to spontaneous recovery.

The Treatment of Essential Thrombocytopenic Purpura, with Notes on Forty-Four Cases in Which Splenectomy Was Performed

Dr. Herbert Z. Giffin, Rochester, Minn.: In an endeavor to determine the place of splenectomy in the treatment of hemorrhagic purpura, the following groups of cases were reviewed: forty-four cases under personal observation in which splenectomy was done, twenty-one cases not submitted to splenectomy, and twenty incipient acute cases reviewed from the literature since 1926, and not included in Spence's collection of cases reported in 1928. Cases were grouped as chronic with multiple recrudescences, and as incipient, or those seen in the primary attack. Chronic cases were divided into mild cases, cases of moderate and marked severity, and cases seen during an acute exacerbation of the chronic disease. Incipient cases were divided into mild cases, cases of moderate severity, and cases of incipient acute progressive type. The following conclusions were reached:

1. In chronic cases of hemorrhagic purpura of a mild degree of clinical severity the patients are best treated by the careful elimination of all focal infection, the administration of large doses of iron, an adequate diet, and transfusions if necessary.
2. In chronic cases of moderate or marked clinical severity, if the condition is sufficiently disabling, the patients are best treated by transfusion and splenectomy during remission; severe recurrences should not be allowed to develop in chronic types of the disease.
3. The cases seen in an acute exacerbation of chronic hemorrhagic purpura offer the greatest difficulty in the decision for or against splenectomy. Because of the fact that fundamentally the disease is one of remissions, every opportunity should be given to the patient, in an acute exacerbation with anemia, at least temporarily to improve before the advisability of splenectomy is decided on.
4. In incipient cases of short duration and mild and moderate severity the patients should be treated expectantly and by medical measures. In most of the incipient cases the patients recover spontaneously, and remain well.
5. In incipient acute progressive cases which are defined as cases of marked severity and progressive course in their primary attack, in which improvement does not occur with frequent transfusions, the patients are best treated by prompt splenectomy. In this group of cases an early accurate diagnosis and avoidance of procrastination are important.
6. Recurrences following splenectomy have been less frequent and less severe in recent years since more insistence has been placed on removal of focal infection, and subsequent reexamination for focal infection.

Hematopoietic Response in Pernicious Anemia, Following Intramuscular Injections of Gastric Juice

Drs. Roger S. Morris, Leon Schiff, George Burger and James Sherman, Cincinnati: To determine whether the normal stomach secretes a substance which, while without effect on reticulocyte response when given orally, may, when given parenterally, cause a response, we proceeded as follows: Normal, nonanemic patients were given histamine and the gastric juice was extracted by lavage. The juice was then rendered neutral to litmus, proved sterile, and injected intramuscularly, first in rabbits, later in man, without undue reaction. Intravenous injection caused, however, severe local reaction.

Next, neutralized sterile juice in amounts up to 20 cc. was given intramuscularly to a patient with pernicious anemia. The reticulocyte response was very faint. Attempts were then made to concentrate the gastric juice by evaporation to a volume of about 3 to 5 per cent. We thus secured a preparation of definite activity in procuring reticulocyte response to about 6 per cent in a patient with one million red cells. This response was far below that produced by liver extract or desiccated hog stomach. We supposed our evaporation methods had partially inactivated the substance by the heat used (38 C.) and therefore, on the advice of Dr. Cullen, we used vacuum distillation for from two to four hours, at a temperature not above 40 C.

This distilled concentrated juice was now given to patients with pernicious anemia. The equivalent of 450 cc. of juice was given to a patient with 2.1 million red cells and it produced a reticulocytosis of 17.6 per cent in thirty-six hours. Twelve days after the injection the red count and hemoglobin percentage began to increase. During the next twelve days the count increased by 1.5 million red cells and the hemoglobin by 20 per cent. It then remained stationary until further treatment was given. In a second patient a still more striking rise was obtained. The results obtained lead us to infer that there is a powerful bone marrow stimulant present in normal gastric juice, which produces reticulocyte response and also maturation of the red cells. There is a still earlier increase in red cells containing nuclear particles. There is also an increase in the white cell count and an increase in blood platelets. We are trying, at present, to obtain greater potency through refinements of method. Since pain in the gluteal muscle and buttocks has been present after injection, we are endeavoring to procure an extract which lessens and shortens this symptom.

The antianemic substance of gastric juice is thermolabile, dialyzable and exhaustible and is probably a hormone, for which we have proposed the name addisin, after Thomas Addison, who first described pernicious anemia. Evidence indicates that this may be the physiologic stimulant of bone marrow, which maintains the blood cells and hemoglobin at the normal level. It seems highly probable that the lack of addisin in gastric juice is the cause of pernicious anemia. Its administration intramuscularly has proved to be efficacious therapeutically in this disease, and it may be found to be of use in other blood dyscrasias. Its effect on cord changes in pernicious anemia has not been determined.

DISCUSSION

Dr. H. Z. Giffin, Rochester, Minn.: My associates collected gastric juice and concentrated it in vacuo from 195 cc. down to 8 cc. There was a very slight rise two days after the injection; then the reticulocytes fell back. On the eighth day they rose and on the tenth day the reticulocytes reached 21 per cent. This is the delayed type of reaction.

Dr. W. B. Castle, Boston: I think the hematopoietic response may be of use in determining whether the intrinsic factor is present in the juice. I don't feel that I am able to say why it is necessary to assume that the substance demonstrated by Dr. Morris and his co-workers is the hormone which controls function of the bone marrow. In our early work we were anxious to discriminate clearly whether we were dealing with the substance present in the gastric juice or whether the substance acted on beef muscle to produce the reaction. Was it in the gastric juice alone, was it in the beef alone or was it an interaction between the two substances? Recently we have combined 50 cc. of gastric juice with 200 Gm. of beef muscle. It was surprising that results were not obtained with small quantities of gastric juice when injected intravenously. The effect of the substance by mouth is one-fiftieth that of intramuscular injection. Therefore 1 or 2 cc. of gastric juice administered intramuscularly should give results. Four hundred cubic centimeters of gastric juice would have an equivalent of 22 liters given by mouth. The liver, placenta, brain and pancreas all have hematogenic properties, but if one gave 22,000 cc. of gastric juice by mouth, I don't know what would happen. If our factor will work neutrally when given with beef muscle, are we giving opportunity for a certain amount of juice and a certain amount of muscle to react? I should like to bring out the fact that that possibility is still left open. We have the interaction as one factor, and hematopoiesis may be one possibility. We must be able to determine by intramuscular injection of gastric juice whether it contains the intrinsic factor or not. This work strongly suggests that possibility.

Dr. J. T. Wearn, Cleveland: Why don't calves get pernicious anemia? Perhaps there is something in grass, grain or oats that prevents this. Recently a good product of pure calves' gastric juice was obtained from the fourth pouch of the stomach of the calf.

Dr. Roger S. Morris, Cincinnati: I do not know how to explain delayed reticulocyte response in the case quoted. In my experience, similar curves have not been encountered. I do not know whether I got all the points correctly from Dr. Castle. If this is a hormone, it is dialyzable and exhaustible, which militates against its being an enzyme. Whether it is the hormone or not, which is a physiologic stimulant for the bone marrow activity, we are unable to say. After a single dose given intramuscularly, we think we have got an increase in the red blood cells, leukocytes and blood platelets and this suggests that it is a bone marrow stimulus that operates to keep a balance of the bone marrow elements. We don't know why small amounts are ineffective. Apparently concentrated juice is needed. When the juice is not concentrated there is a deeper staining but no increase of reticulocytes. When we concentrate the juice we get good results. We have tried large amounts by mouth but have not been able to draw conclusions. We fed 10 liters of hog gastric juice through a duodenal tube to one patient but there was no change in reticulocytes. As to the intramuscular injection resulting in interaction between the intrinsic factor and the beef muscle, we cannot answer that. We have examined the site of injection and have found no change either gross or microscopic, although there may have been some chemical change going on. We hope to throw light on this question later. If we can obtain a product which we can give intravenously, we can rule out the muscle reaction. When we gave from 300 to 400 cc. by mouth, the reaction began on the fifth day and reached its peak on the eighth day.

Observations on Etiology and Treatment of Sprue in Porto Rico

Drs. William B. Castle, Boston, and Cornelius P. Rhoads, Springfield, Mass.: Study of 100 cases of sprue in Porto Rico, including cases in all stages of the disease, demonstrates a close relationship between this disease and addisonian pernicious anemia as to etiology and the most satisfactory methods of treatment. As has been postulated for pernicious anemia by one of us (W. B. C.), three possible mechanisms or combinations of these may be involved in the production of the "conditioned deficiency" believed to be the immediate cause of pernicious anemia. Free hydrochloric acid was demonstrated after an alcohol test meal in the gastric contents of about half the patients examined; after histamine, in about 20 per cent more. In certain cases of sprue a lack of "extrinsic factor" in the diet or a lack of "intrinsic factor" in the gastric juice, both in early and in late stages of the disease, was demonstrated. In some advanced cases an apparent difficulty in the absorption of hematopoietic substances from the gastro-intestinal tract was found to be an additional factor conditioning the major deficiency. The deficient substance is apparently identical with the hematopoietic substance produced by the interaction of beef muscle and normal human gastric juice or with the extracts of liver described by Cohn, Minot and their collaborators as effective in pernicious anemia. The sternal bone marrow examined after biopsy before treatment showed a megaloblastic proliferation comparable to that seen in pernicious anemia. No evidence of aplasia was obtained. No significant correlation between Monilia psilosis infection and sprue was observed in cultures of the stools in various types of anemia.

In nearly all the cases of sprue, prompt symptomatic relief of sore tongue and diarrhea was obtained from the administration of the liver extract effective in pernicious anemia either orally or especially by parenteral injection. The latter procedure was positively life saving in a few cases and the cost of treatment was materially less. In cases presenting a hyperchromic blood picture, adequate dosage with liver extract alone produced reticulocyte crises and improvement of the blood values occasionally as striking as in pernicious anemia but usually of a decidedly modified character. In many cases, satisfactory progress was not made without the addition of iron ammonium citrate, especially when, after treatment with liver extract, the hyperchromic anemia became hypochromic in character. In a small number of cases of sprue with an original hypochromic blood picture, iron therapy was effective in relieving the anemia but not the gastro-intestinal symptoms, which, however, yielded promptly to liver extract. In a few cases, autolyzed yeast preparations produced reticulocyte crises and improvement of the blood values.

DISCUSSION

Dr. Joseph H. Pratt, Boston: One comes across few cases of sprue in practice. In my cases I made a study of the absorption of fat. The authors have not mentioned one feature which distinguishes sprue from pernicious anemia, and that is the presence of a fatty diarrhea, which does not occur in any other condition except advanced pancreatic diarrhea. I should like to ask Drs. Castle and Rhoads if such stools were reported by them. There is an enormous amount of fat in the stools, and absorption studies show that 50 per cent of the fat is not absorbed. This condition is not observed in pernicious anemia. The authors said that within five days the diarrhea had ceased. Can they give any opinion on that point and was there any investigation made on the amount of fat in the stools? In my first case of sprue the patient had come from Porto Rico, and examination showed 50 per cent of fat in the feces.

Dr. W. B. Castle, Boston: I remember that the question was frequently asked what the difference is between sprue and pernicious anemia. It was embarrassing to realize that it could not be stated definitely in any one case. They are hard to distinguish, and yet the symptomatology is different. I have seen a case of sprue with fatty diarrhea, and yet when the patient arrived in Boston he apparently had pernicious anemia. Dr. Peabody also saw that patient, who had come from China. However, in cases like these, the sea voyage seems to cause a change. Probably the diet influences the nature of the stools. We were told that fat would produce diarrhea in these patients. We had difficulty in getting the doctors to allow us to keep the patient on a rice diet. We saw no fat in the stools, but I suspect that if the patient had eaten fat, it would have come through in the stools as there is a difficulty of absorption of some substances. But no matter what diet we gave, the administration of sufficient liver extract made the stools normal. Another piece of evidence was the clearing up of inflamed tongues. This proves the powerful effect of the substance on the lower gastro-intestinal tract and on the abnormal motility and absorption.

Chronic Severe Asthma: A Study of a Group of Cases Requiring Hospital Treatment

Dr. Francis M. Rackemann, Boston: This paper will appear in full in The Journal.

Pneumonoconiosis: An Unusually Malignant Form

Dr. Eugene S. Kilgore, San Francisco: This paper will appear in full in The Journal.

DISCUSSION

Dr. J. H. Means, Boston: I saw the first patient mentioned in this presentation. The symptoms were marked. The lungs at necropsy showed an unusual state of fibrosis. They were full of areas of emphysema and were covered with air blebs. I think it is a good thing that mention has been made of the combination of silicon and alkali. This seems to produce a silicosis with more sudden and rapid symptoms. We should be on the lookout for cases with this particular symptomatology.

Dr. Eugene S. Kilgore, San Francisco: The unfortunate thing about this preparation is that the powder is extremely fine, and this accounts for its action on the respiratory tract. The British writers think that the added alkali is responsible for the deleterious action. They offer a chemical explanation favoring the view that silica is injurious when dissolved in faintly alkaline body juice, and that when alkali is introduced this effect occurs very rapidly.

The Mechanism of Nonobstructive Emphysema

Drs. Harry L. Alexander and W. B. Kountz, St. Louis: There are two types of emphysema: (1) the type associated with bronchial obstruction, resulting in large lung, and (2) the senile type. Both have the barrel-shaped chest and hyperresonance of the lung. Obstructive emphysema pushes down the diaphragm so far that it has little excursion. The senile type, however, does not push the diaphragm down. If a pneumograph is put around the chest and abdomen the upper chest does the work, but in the senile type of emphysema the diaphragm does most of the work. In the obstructive type the vital capacity of the individual is reduced, but in the senile type there is little difference in the vital capacity. In the obstructive type there is considerable anoxemia and bowed spine, while the senile type shows the stiff, straight spine. There is a lesion of the intervertebral disks, and as the disks swell they crowd the bodies of the vertebrae, the spine curves and pushes away from the sternum and the ribs spread. Thus the obstructive type is primarily a pulmonary lesion, while the senile type is due to distortion of the spine, which distorts the chest wall. The senile type therefore is due to the distortion in the spine itself.

DISCUSSION

Dr. Francis Rackemann, Boston: Four out of thirteen of our cases showed emphysema. It occurred in the types of individuals that the authors have described.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

1: 385-416 (April) 1932

Tracheotomy Treatment of Pulmonary Suppuration Following Removal of Nail. M. Equen, Atlanta.—p. 385.
Rocky Mountain Spotted Fever: Report of Case. H. Boyd, Scottsboro.—p. 387.
Diagnosis of Upper Abdominal Conditions. A. C. Jackson, Jasper.—p. 389.
Use of Atropine in Eye Conditions. B. F. Jackson, Montgomery.—p. 391.
Tuberculosis, with Especial Reference to Incidence in Children and Modes of Infection. E. R. Emens, Decatur.—p. 392.
Dentistry in Relation to Obstetrics. R. C. Young, Anniston.—p. 394.

American Heart Journal, St. Louis

7: 415-552 (April) 1932

*Phlegmasia Alba Dolens and Relation of Lymphatics to Thrombophlebitis. J. Homans, Boston.—p. 415.
Some Clinical Features of Coronary Artery Disease. R. L. Levy, New York.—p. 431.
*Opening Snap (Claquement d'Ouverture de la Mitrale) in Mitral Stenosis: Its Characteristics, Mechanism of Production and Diagnostic Importance. A. Margolies and C. C. Wolferth, Philadelphia.—p. 443.
*Form of Premature Beats Resulting from Direct Stimulation of Human Ventricles. H. M. Marvin and A. W. Oughterson, New Haven, Conn.—p. 471.
Electrocardiographic Changes Following Ligation of Coronary Arteries of Dog. Arlie R. Barnes and F. C. Mann, Rochester, Minn.—p. 477.
*Auricular Flutter and Fibrillation Showing Varying Block Associated with Cheyne-Stokes Respiration. W. W. Hamburger, L. N. Katz and S. H. Rubinfeld, Chicago.—p. 498.
*Experimental Bundle-Branch Block in Cat. G. H. Roberts, J. H. Crawford, D. I. Abramson and J. C. Cardwell, Brooklyn.—p. 505.
Analysis of the Q-R-S Complex of Electrocardiogram. N. M. Fenichel, Brooklyn.—p. 514.

Relation of Lymphatics to Thrombophlebitis.—Homans calls attention to the fact that there are forms of thrombophlebitis dependent on an unhealthy state of the vein's wall—the varicose type—and peculiar sorts, partly of local origin and partly due, perhaps, to an abnormality of the blood—phlebitis migrans. There are also venous thromboses of traumatic origin. But thrombophlebitis which affects the previously healthy veins draining the lower limbs, particularly the familiar scourge phlegmasia alba dolens, appears to be secondary to a nonsuppurative lymphangitis, which from its situation is able to attack artery as well as vein. And the principal manifestations of such a disease are neither venous nor arterial but lymphatic.

Opening Snap in Mitral Stenosis.—According to Margolies and Wolferth, the opening snap (claquement d'ouverture de la mitrale) can be heard and recorded in more than half the cases of mitral stenosis. It has not been observed in the absence of mitral stenosis. It is one of the most important diagnostic signs of this valvular lesion. The chief characteristics of the opening snap are the following: 1. The sound is a sharp snap or click. 2. It has been found to occur from 0.03 to 0.19 second after the beginning of the second sound, the ordinary range being from 0.06 to 0.11 second. 3. It is usually loudest in the fourth left interspace, occasionally in the third, slightly above and to the right of the area in which the diastolic murmur is best heard. 4. It precedes the onset of the murmur by a short interval. 5. It is usually best elicited with the patient in the recumbent position. 6. In some cases it can be brought out by exercise and by increase of the cardiac rate. 7. It tends to be louder when the rate is rapid. The interval between the second heart sound and the opening snap is influenced by the cardiac rate, tending to become shorter as the rate increases. Variations in the duration of this interval occur during auricular fibrillation and sinus arrhythmia, depending on the length of the preceding heart cycle. The opening snap is easily differentiated from reduplication of the second sound, protodiastolic gallop sound, the physiologic third heart sound and systolic clicking sounds. The time relations of the opening snap, as observed from comparisons of sound tracings with electrocardiograms, apex cardiograms, jugular phlebograms, and auricular and ventricular roentgen kymograms, exclude auricular contraction, ventricular rotation or filling, or shocklike waves transmitted from the aortic to the mitral valve, as factors in its production. All the evidence thus far available is in accord with the hypothesis that the sound is produced by the sudden limitation of the opening movement of a stenosed mitral valve which occurs in early diastole as soon as the left ventricle relaxes sufficiently to permit the pressure of the auricular blood column to become effective.

Premature Beats from Direct Stimulation of Ventricles.—Premature contractions evoked by electrical stimulation of one spot on the right ventricle and one on the left ventricle of a partially exposed human heart were recorded by Marvin and Oughterson in the three standard leads of the electrocardiogram. These were not taken simultaneously but consecutively. The authors were able to confirm the observations of Barker, Macleod and Alexander, who first showed that premature contractions derived from stimulation of the right ventricle have the chief initial deflection upward in lead I, while those from stimulation of the left ventricle have the chief initial deflection downward in lead I.

Auricular Flutter and Fibrillation.—Hamburger and his associates report an unusual case in which the auriculoventricular block accompanying auricular flutter and coarse auricular fibrillation varied markedly during Cheyne-Stokes breathing, in one instance leading to a complete auriculoventricular block during the hyperpneic stage. Hyperpnea in this case increased the auriculoventricular block and apnea decreased it, without any apparent effect on the rate of flutter or fibrillation of the auricles.

Experimental Bundle-Branch Block.—Roberts and his associates performed experiments on cats in which either the right or left division of the bundle of His was cut. Both concordant and discordant curves were obtained. When the right division was transected, the chief initial deflection in lead I was downward in both types, but in lead III it was upward in the discordant type and the reverse in the concordant. When the left division was cut, exactly opposite results were found. In analyzing the curves, the important lead to study in order to decide on the location of the lesion appeared to be lead I.

American Journal of Anatomy, Philadelphia

50: 1-177 (March 15) 1932

*Effect on Subsequent Pregnancy After Roentgen Raying One Ovary of Rat, Following Removal of Normal Ovary During Course of Gestation. R. I. Pencharz and J. A. Long, San Francisco.—p. 1.
*Gonad Hormone Functions, and Reciprocal Influence Between Gonads and Hypophysis with Its Bearing on Problem of Sex Hormone Antagonism. C. R. Moore and Dorothy Price, Chicago.—p. 13.
*Cowper's Gland and Its Reaction to Castration and to Different Sex-Hormone Conditions. R. E. Heller, Chicago.—p. 73.
Osteoclasts and Cartilage Removal in Endochrondral Ossification of Certain Mammals. G. S. Dodds, Morgantown, W. Va.—p. 97.
Effects of Continued Estrin Injections on Young Rats. J. Spencer, F. E. D'Amour and R. G. Gustavson, Denver.—p. 129.
Nasal Cavity and Direction of Fluid by Ciliary Movement in Macacus Rhesus (Desm.). A. M. Lucas, St. Louis.—p. 141.

Effect of Roentgen Rays on Pregnancy.—Pencharz and Long drew one ovary in each of twenty-four rats through a dorsal incision and exposed it to roentgen rays while all the rest of the body was completely protected. During pregnancy immediately following, the untreated ovary was removed. Abortion or resorption resulted in twenty-three out of the twenty-four cases. In the twenty-fourth case the normal ovary was removed so late in gestation (nineteenth day) as to make the case comparable to ordinary late ovariectomy. The irradiated ovaries contained what is apparently luteal tissue, interstitial tissue, and degenerate follicles. The presence of an irradiated ovary containing these structures is not sufficient to maintain pregnancy.

Gonad Hormone Functions.—Moore and Price describe experiments from which they conclude that a large number of reproductive phenomena, gonadal and reproductive accessory behaviors, can be interpreted logically on a basis of hypophysis-gonadal interrelationships. Gonads function only when they are forcibly stimulated by certain secretions that are normally provided by hypophyseal activity. The activity of the hypophysis, on the other hand, is to some extent controlled by gonadal secretions, for when these gonad hormones are present in effective amounts hypophyseal activity is lowered. Sex-hormone antagonism, in the Steinach sense, does not exist. Injuries to the gonads follow administration of either sex hormone into either sex, and the authors interpret the mechanism as a hypophyseal involvement.

Cowper's Gland and Its Reaction to Castration.—According to Heller, Cowper's gland of guinea-pigs and rats undergoes involution after castration, the changes occurring more rapidly in the rat. These glands reach their adult secretory state at approximately 55 days of age in the rat. Castration atrophy in Cowper's gland is detectable in the rat in ten days; it is well advanced at twenty days, and reaches essentially its maximal state of involution at approximately a hundred days. Injection of testis hormone prevents castration atrophy or repairs castration damage already present. Administration of gonadal-stimulating substances by means of fresh hypophyseal implants or hebin injections in normal young males results in a precocious development of these glands. Administration of estrin to castrated males is without effect on Cowper's gland; injection into normal males, however, is followed by involution changes in these glands that resemble castration atrophy in all respects. Mixtures of estrin and testis hormone injected into normal or castrated males result in normal Cowper's glands. Estrin injections into normal males accompanied by administrations of gonadal-stimulating substances do not cause damage to Cowper's gland. These observations are in agreement with the factual basis of the theory of a reciprocal influence between gonads and hypophysis, developed by Moore and Price, and are interpreted on that basis.

American Journal of Diseases of Children, Chicago

43: 803-1050 (April) 1932

*Pulmonary Diseases: Five Thousand Eight Hundred and Sixteen Cases in Children, with Especial Reference to Childhood Type of Tuberculosis. C. A. Stewart, Minneapolis.—p. 803.
*Human Milk Studies: IX. Variations in Composition of Milk at Four Hour Intervals During Day and Night. Betty Nims, Icie G. Macy, Minerva Brown and Helen A. Hunscher, Detroit.—p. 828.
*Respiratory Metabolism in Infancy and Childhood: XIII. Calorigenic Action of Thyroid Extracts in Normal Infants. T. C. Wyatt, Syracuse, N. Y.; L. E. Weymuller, Brooklyn, and S. Z. Levine, with assistance of M. Kelly, New York.—p. 845.
*Hymenolepis Nana: Report of Additional Cases and Experimental Transmission from Man to Rats. H. Tsuchiya and E. H. Rohlfing, St Louis.—p. 865.
*Influenzal Meningitis Treated with Specific Antiserum and Complement: Report of Five Cases. H. K. Ward and L. D. Fothergill, Boston.—p. 873.
*Changes of Blood Lipid in Children Following Application of Anhydrous Wool Fat and Ultraviolet Irradiation. J. S. Leopold, A. Bernhard and A. Tow, with assistance of I. J. Drekter, New York.—p. 882.
Normal Histology of Infants' Brains, with Particular Reference to Anatomic Changes in Brain in Intestinal Intoxication of Infants. H. Schwarz, P. Goolker and J. H. Globus, New York.—p. 889.
Agranulocytosis: Report of Case, with Autopsy Observations. L. W. Empey and F. Proescher, San Jose, Calif.—p. 947.

Pulmonary Diseases.—Stewart's report is based on a study of 5,816 children, including 3,981 (68.4 per cent) and 1,835 (31.6 per cent) children having negative and positive Pirquet tests, respectively. In 1,179 children, or 20.3 per cent of the entire group of 5,816 persons, intrathoracic disease was revealed by roentgen examination. The prevailing type of lesion found in these 1,179 children was that produced by the first infection by Mycobacterium tuberculosis, as shown by the fact that childhood tuberculosis was found in 82.3 per cent (970 instances) of these cases. For the 3,981 children having a negative Pirquet test, intrathoracic disease was reported in only 6.4 per cent of the cases (255 children), of which 3.9 per cent (154 cases) had lesions characteristic of the childhood type of tuberculosis. If questionable and slight intrathoracic glandular calcifications are excluded, the data show that the more conspicuous lesions characteristic of childhood primary tuberculosis were found in only 0.58 per cent (23 cases) of the children with a negative Pirquet test. For the 1,835 children having a positive Pirquet test, intrathoracic disease was discovered by roentgen examination in 50.4 per cent (924 cases), and 44.5 per cent (816 children) had lesions of the childhood type of tuberculosis. When questionable and slight intrathoracic glandular calcifications are excluded, the more conspicuous and readily identified lesions typical of tuberculosis of first infection were found in 25.9 per cent (475 cases) of the 1,835 children with a positive Pirquet test. If a value of 100 per cent is assigned to the Pirquet test as measuring its efficiency in the discovery of childhood tuberculosis, the roentgen examination has a reliable efficiency of about 25 per cent, and the physical examination an efficiency of a small fraction of 1 per cent. From the standpoint of the appearance of lesions discovered by roentgen examination, childhood pulmonary tuberculosis of first infection may be divided into the following three types: (1) resolving pneumonic-appearing parenchymal consolidations, which represent early stages of the disease; (2) intrathoracic glandular calcifications of various degrees, which represent late permanent stages of the disease, and (3) Ghon tubercules associated with hilar gland calcification, which represent late and permanent stages of the diseases. These various types of lesions merely represent various developmental stages in the evolution of the disease produced by a primary tuberculous infection, between which many transitional stages may be noted. The end-result in nonfatal cases is always the same in that calcification of the hilus glands appears, or that Ghon tubercles develop associated with calcification of the homolateral hilus lymph nodes.

Human Milk Studies.—*Nims and her associates studied the variations that occur in the composition of human milk at periodic four hour intervals throughout the day and night. The subjects were three women living in their usual home environments, typical of the average middle-class American family. Under the conditions of the experiments it was demonstrated that, independently of variations in such factors as food, rest, activity, stage of lactation, climate and possible errors involved in the methods followed, there were significant changes during the day in the volume of the breast milk of the three women, and characteristic daily trends in the variation in composition of the milk with respect to the fat, total solids, total nitrogen, total ash, calcium, phosphorus and chloride components.*

Respiratory Metabolism in Infancy and Childhood.—Wyatt and his associates briefly summarize the results of their study of the effect of thyroid therapy on the energy exchange of normal infants as follows: 1. Thyroid extracts, in adequate dosage, exert a calorifacient action in infants with apparently normal thyroids and often induce in these subjects clinical symptoms characteristic of spontaneous hyperthyroidism. 2. The metabolic response of these subjects to thyroid extracts in smaller dosage is inconstant. 3. The minimal amounts of the drug capable of producing profound clinical and metabolic reactions in infants without hypothyroidism are apparently comparable to the dosage required to induce a similar response in adults without hypothyroidism. They notably exceed the usual dosage effective in subjects of all ages with hypothyroidism. 4. The usual persistence of thyroid action in these normal infants was approximately two to three weeks. This time interval coincides with the usual duration of thyroid action reported for normal adults and is considerably shorter than the persistence of such action in subjects with hypothyroidism. 5. In terms of absolute dosage, the whole gland product and the desiccated extract vary markedly in their potency as calorigenic agents, but they are equally potent when judged by their iodine content. On the latter basis, thyroxine, the active principle of the thyroid hormone, appears to be the most potent calorigenically of the three products.

Hymenolepis Nana.—*Tsuchiya and Rohlfing describe two* cases of hymenolepis infection (Hymenolepis nana) in St. Louis, in addition to those previously reported by Goldman. Neither clinical nor laboratory observations, however, were indicative of pathologic conditions in these children. With a view to determining the possible source of hymenolepis infection, a cross-infection experiment with ova from human sources was carried out in rats. The results of this study showed that two of six clean rats were successfully infected with Hymenolepis nana. Subsequent experiments showed that five of ten clean rats were found to be infected with the ova of the two rats previously infected with human materials. Since there is the possibility of acclimatizing human parasites in rats, rats in turn may become one of the sources of the infection in human beings.

Influenzal Meningitis.—Five patients with acute meningitis caused by the influenza bacillus were treated locally by Ward and Fothergill with the injection of fresh normal serum and an efficient specific antiserum. All the patients died eventually, but in every case the cerebrospinal fluid was sterilized for varying periods, up to fourteen days. The authors believe that the cause of death was almost certainly due to a localization of the inflammatory process in areas that were shut off from the general subarachnoid space, and so protected from the action of the complement and the specific antiserum.

Blood Cholesterol.—Leopold and his associates report that ultraviolet irradiation increased the blood lipids in 25 per cent of thirty-two patients studied. Treatment by inunction with nonirradiated wool fat produced no changes in blood lipids, but subsequent treatment with irradiated wool fat definitely increased the lipid fractions of the blood. Treatment with inunctions of wool fat followed by ultraviolet irradiation produced significant increases in blood lipids in 89 per cent of the cases with a low initial cholesterol and in 33 per cent of the cases with a normal initial cholesterol. Treatment with wool fat and ultraviolet rays also produced a rise in free cholesterol and cholesterol esters in 86 per cent of the cases, and of the total alcohol ether extract in 91 per cent of the cases in which this treatment was given. Of ten cases in which a low initial value for lipoid phosphorus was encountered, none showed a rise in lipoid phosphorus after treatment with wool fat and ultraviolet irradiation. Low values for cholesterol are an indication as to the necessity for treatment with inunctions of wool fat and ultraviolet irradiation. Changes in the amount of cholesterol serve as a guide to the amount of treatment to be given.

American Journal of Public Health, New York

22: 353-454 (April) 1932

Ice Cream Sanitation and Control. F. W. Fabian, East Lansing, Mich. —p. 353.

*Relative Pneumonia Fatality Among Surface Workers and Miners: Study of Two Thousand Six Hundred and Three Cases of Pneumonia and Two Hundred and Thirty-Eight Deaths from Tuberculosis in Experience of Tennessee Coal, Iron and Railroad Company, 1925 to 1930, Inclusive. C. H. Kibbey, Fairfield, Ala.—p. 360.

*Tuberculosis in Young Females. W. J. V. Deacon, Lansing, Mich.—p. 367.

Basis of Rationing for Federal Prisoners. P. E. Howe and A. H. MacCormick, Washington, D. C.—p. 375.

Experimental Poliomyelitis: Its Contribution to Our Knowledge of Human Disease. S. D. Kramer, Boston.—p. 381.

Basic Records for Use in County Health Department. J. Collinson, Baltimore.—p. 391.

Isolation of Organism of Abortus-Melitensis Group from Blood Clot, Serum of Which Failed to Give Agglutination with Bacillus Abortus. Ruth Gilbert and H. Gladys Dacey, New York.—p. 410.

Modification of Fildes Anaerobic Jar. G. D. Cummings, Lansing, Mich. —p. 410.

Pneumonia and Tuberculosis Among Miners.—In a study of 2,603 cases of pneumonia and 238 deaths from tuberculosis among surface workers and miners Kibbey noted that the annual case incidence of pneumonia for ore miners was nearly double that for any other group; surface workers came next, and of all wage earners coal miners suffered least. The story of pneumonia deaths presented an entirely different picture. The fatality rate expressed in deaths per hundred cases was found to be considerably higher for surface workers; 560 cases with 166 deaths, a rate of 29.6; ore miners 143 cases with 33 deaths, rate 23.0; coal miners 127 cases with 29 deaths, rate 22.8; female dependents 994 cases with 180 deaths, rate 18.1; male dependents 779 cases with 102 deaths, rate 13.1. Practically 100 per cent of the coal miners who formed the basis for this investigation have anthracosis, but their pneumonia incidence rate was exactly in proportion to their number in the entire population. A rate of 4.6 cases per thousand, the lowest of any wage earning group, compares quite favorably with 4.3 cases per thousand dependents, which includes all women and children. The fact that coal miners exhibited the lowest pneumonia fatality of any wage earning group would appear to indicate that anthracosis has had no influence either as a predisposing factor or in contributing to fatality. In the operations in which the men worked, several ore mine openings constitute a single operation. Each operation is provided with a large centrally located bath house at which men do their changing. These houses are constantly at temperatures around 80 F., and many of the miners must walk half a mile or more from mine to bath house. Coming from the mine as they do, in clothing dampened with perspiration, they are in certain weather subjected to considerable chilling before reaching a bath house which is kept too hot. Leaving an excessively heated bath house, they are subjected to a second chilling on the walk home or car line, which may be a mile distant. The author believes that these facts more nearly account for the prevalence of pneumonia among ore miners than any condition under which they work, or the presence of possible pneumonoconiosis. The fact that this particular group is more resistant to the destructive processes of pneumonia than are those in whom pneumonoconiosis is absent would appear to argue the soundness of such reasoning. Although coal miners presented the lowest pneumonia fatality rate of any wage earning group, the author's experience is that coal miners die from tuberculosis with nearly three times the frequency of the average for total population and have a mortality rate more than two and a half times that of surface workers. Expressed in deaths per thousand persons annually, the rates are: coal miners, 1.28; ore miners, 1.14; surface workers, 0.46; total population average, 0.44; dependents, 0.36. That the etiology of tuberculosis is in some way intimately bound up with calcium metabolism appears to be reasonably certain. Calcium metabolism, regardless of diet, is impossible in the absence of sunlight. The author tentatively suggests that high death rates from tuberculosis among ore and coal miners might more reasonably be attributed to their deprivation of sunshine than to a condition which apparently does not influence other respiratory diseases.

Tuberculosis in Young Females.—Deacon presents the results of a study of the occupation of young females dying from tuberculosis. During the years 1927, 1928, 1929 and 1930 there were in Michigan 2,630 deaths of females between 15 and 29 due to tuberculosis (all forms). The death certificates of 289 did not contain a statement of occupation, or the statement was too ambiguous to enable one to determine whether or not the person was gainfully employed. These 289 were therefore eliminated and only the 2,341 in which the statement of occupation was fairly clear were considered. The occupations given were: school, 14.1 per cent, and home, 62.3 per cent—not gainfully employed; industry, 23.6 per cent—gainfully employed. Of the 2,341 deaths, 1,787, or 76.4 per cent, were indicated as not gainfully employed; 554, or 23.6 per cent, were gainfully employed. From this showing it is obvious that industrialization is not an important factor in the mortality from tuberculosis among young women. The author sees no reason to believe that there is any more hazard involved when a young woman leaves her home, whether she goes to school or into an office, in most cases working not to exceed eight hours under favorable sanitary environment. Whether one considers housewives, employed persons or students, the problem is in the home; and every one who has experience in public health work realizes that this is the most difficult group to reach.

Archives of Dermatology and Syphilology, Chicago

25: 599-784 (April) 1932

*Moniliasis and Moniliids. J. G. Hopkins, New York.—p. 599.

Search for New Method for Determination of Fungicidal Action of Chemicals: Preliminary Report. H. Sharlit and E. Muskatblit, New York.—p. 615.

*Occupational Melanosis: Report of Case. L. M. Wieder, Milwaukee. —p. 624.

*Superficial Glossitis and Perlèche Due to Monilia Albicans: Their Association with Other Forms of Moniliasis. L. B. Robinson and Mary Compton Moss, New York.—p. 644.

*Dermatoses Associated with Neurocirculatory Instability, Generalized and Localized Pruritus, Neurodermatitis, Dyshidrosis, Urticaria and Angioneurotic Edema, Lichen Planus, Neurotic Excoriations, Alopecia Areata, Dermatitis Herpetiformis and Scleroderma. S. W. Becker, Chicago.—p. 655.

Poikiloderma Vasculare Atrophicans: Report of Case. B. Usher, Montreal, Canada.—p. 683.

Eczema Solare and Porphyria. H. J. Templeton and C. J. Lunsford, Oakland, Calif.—p. 691.

Moniliasis and Moniliids.—According to Hopkins, the evidence accumulated by many investigators indicates that organisms related to yeasts are the cause of a number of common dermatoses. Recent studies show that at least a majority of these are caused by one well defined species, Monilia albicans. This is the same species that has been found in thrush of the mouth and in intestinal sprue. The more common skin lesions, interdigital erosion, paronychia and perlèche, are so frequently associated that they apparently constitute one disease, moniliasis of the skin. The intertriginous forms and the vulvitis occur chiefly in diabetes. The fact that patients with moniliasis of the skin harbor the parasite in their alimentary tracts suggests that this focus is a factor in the occurrence and persistence of the skin lesions. Sensitization to Monilia albicans occurs. In a few cases the conclusion seems justified that skin lesions in sensitized persons result from absorption of substances produced by monilias in the alimentary tract or by some other focus of infection. Further study is necessary to determine whether such sensitization to alimentary infection is a frequent or an important factor in the causation of dermatoses.

Occupational Melanosis.—Wieder directs attention to a group of industrial dermatoses in which melanosis is an important feature and which heretofore has received little consideration in the American literature. The rôle of coal tar and petroleum derivatives possessing photodynamic activity as etiologic factors in these cases is reviewed. A case is described in which a benzanthrone-anthraquinone compound and naphthalene containing only a minute trace of an impurity of unknown chemical formula were incriminated as etiologic factors by means of skin tests.

Superficial Glossitis and Perlèche.—Robinson and Moss report a series of twenty-two cases of perlèche in adults, which were complicated by superficial glossitis in six cases, by erosio interdigitalis in eight cases, by paronychia in eight cases, and by dermatitis of the toes in four cases. A superficial glossitis from which Monilia albicans can be isolated occurs sometimes in association with perlèche and sometimes independently. Monilia albicans was recovered from perlèche lesions in thirteen cases and from a number of the complicating mycotic lesions. The authors consider that it is doubtful whether the other species of yeastlike organisms obtained were the cause of the lesion from which they were isolated.

Dermatoses Associated with Neurocirculatory Instability.—Becker presents impressions as obtained from the study of 204 unselected cases of generalized and localized pruritus, neurodermatitis, dyshidrosis, urticaria, angioneurotic edema, neurotic excoriations and alopecia areata. The conditions mentioned seem to be found only in a certain type of person, with the exception of some cases of urticaria. The underlying constitutional background seems to be hereditary but not familial. Many of the patients fall into the so-called neurasthenic groups, with the picture of general asthenia and neurocirculatory instability. The constitutional symptoms are easy fatigability, nervous and mental irritability or depression, hyperkinesia, functional gastro-intestinal disturbances, headache, backache, vasomotor rhinitis and asthma. The combinations of dermatoses in the same person are first angioneurotic edema and urticaria, and opposed various combinations of the others. Therapeutic considerations consist, first, in the removal of the precipitating factors; secondly, in the correction of the underlying irritability and exhaustion, and, thirdly, in palliative therapy. Children should be carefully controlled in order to prevent serious difficulty later in life. The prognosis is better if the dermatosis appears late in life. Cooperation of the patient is a necessary aid to therapy. Without this cooperation, palliative therapy is only temporarily efficacious. From the evidence obtained, it would seem that this group of dermatoses should be given a place in the classification of functional nervous disorders. The author believes that the designation "neurodermatoses" might well be applied to them.

Archives of Neurology and Psychiatry, Chicago

27: 761-986 (April) 1932

Emil Kraepelin, the Man and His Work. S. E. Jelliffe, New York.—p. 761.
Head Injuries; Effects and Their Appraisal: I. Experimental Studies of Induced Convulsions and Ventricular Distortion in Cat. S. B. Wortis, New York.—p. 776.
Id.: II. Rôle of Microglia. L. D. Stevenson, New York.—p. 784.
*Id.: III. Encephalographic Observations. E. D. Friedman, New York.—p. 791.
Id.: IV. Evaluation of Evidence. F. Kennedy, New York.—p. 811.
*Differential Diagnosis of Tumor of Brain: Importance of Considering Renal Hypertension with Choked Disk. F. C. Grant, Philadelphia.—p. 816.
*Intracranial Tumor with Unequal Choked Disk: Relationship Between Side of Greater Choking and Position of Tumor. F. A. Gibbs, Philadelphia.—p. 828.
Internal Jugular Venous Pressure in Man: Its Relationship to Cerebrospinal Fluid and Carotid Arterial Pressures. A. Myerson and J. Loman, Boston.—p. 836.
Traumatic Subdural Hematoma with Particular Reference to Latent Interval. W. J. Gardner, Cleveland.—p. 847.
*Amyotrophic Lateral Sclerosis with Mental Symptoms: Clinicopathologic Study. I. S. Wechsler and C. Davison, New York.—p. 859.
*Unusual Cases of Syphilis of Nervous System: Clinicopathologic Study. N. W. Winkelman, Philadelphia, and J. L. Eckel, Buffalo.—p. 881.
*Chronic Progressive Chorea: Pathogenesis and Mechanism; Histopathologic Study. C. Davison, S. P. Goodhart and H. Shlionsky, New York.—p. 906.

Head Injuries: Encephalographic Observations.—As a result of his studies, Friedman has been led to revise his conception of the so-called traumatic neuroses following serious injury to the skull. On the basis of accumulating experience, one may say that, at least in some of the cases of "traumatic neurosis," definite organic changes that can be visualized in the encephalogram have been brought to light. In this field of medicine, in which diagnosis is frequently difficult, it becomes the duty of the clinician to employ every means at his command in order to arrive at a correct interpretation of the patient's symptom complex. Encephalography offers a valuable means of differentiating between organic and functional syndromes.

Differential Diagnosis of Tumor of Brain.—Grant presents five cases of malignant hypertension. In every instance headache, vomiting and choked disk were noted. In none of the cases at the first examination was sufficient evidence of renal disease shown to force consideration of nephritis as the underlying cause of the hypertension. Three of the patients were too young to make generalized arteriosclerosis seem probable, and only one of the three showed definite evidence of hardening of the peripheral vessels. In the two other subjects, rigidity and pulsation of the temporal, brachial and radial arteries were noted. Two of these young persons without sclerotic peripheral vessels showed such definite neurologic evidence of a cerebral lesion, coupled with papilledema and increased intracranial tension on lumbar puncture, that a diagnosis of tumor of the brain was made. Surgical exploration failed to reveal a tumor. Furthermore, the decompression left at the operation failed to reduce the papilledema, although in one case the headache was relieved. All the patients died within six months after discharge from the hospital, an evidence of the serious prognostic import of papilledema in hypertension.

Intracranial Tumor.—According to Gibbs, in cases of tumor of the brain with unequal choked disk greater choking tends to occur on the same side as the tumor. The incidence of homolaterally greater choking is highest among tumors of the temporal and parietal lobes. The incidence of contralaterally greater choking is highest among occipital tumors. The incidence of homolaterally greater choking is higher among cases of parietal tumor with low grade choked disk than among similar cases with high grade choked disk. The incidence of homolaterally greater choking is lower among cases of occipital tumor with low grade choked disk than among similar cases with high grade choked disk. There is no significant association between the side of greater choking and the side of greater involvement of the third to the seventh cranial nerves.

Amyotrophic Lateral Sclerosis with Mental Symptoms.—Wechsler and Davison call attention to the fact that, in the vast majority of recorded cases, amyotrophic lateral sclerosis is not characterized clinically by definite psychotic manifestations. Most of the cases with such manifestations reported in the literature can better be explained by an incidental association with schizophrenic, manic-depressive or paranoid syndromes or with simple depressions. In older patients the occurrence of definite organic dementia could with more reason be ascribed to the coexistent, but at the same time independent, general cerebral arteriosclerosis. In six cases observed by the authors and very few others the psychosis apparently was the cerebral expression of one generalized pathologic process.

Syphilis of Nervous System.—Winkelman and Eckel report seven unusual cases of syphilitic involvement of the central nervous system. Three cases of gumma are included. In all the process began as a focal meningitis with secondary invasion of the parenchyma. Cerebral syphilis and dementia paralytica may be combined in the same case, as in a case that terminated as juvenile dementia paralytica. Serologic examinations were negative in two cases, both of the vascular type, one of the brain and one of the cord. The authors emphasize the fact that cerebral syphilis and a toxemia of any sort may produce severe cortical endarteritic changes in the small blood vessels which are indistinguishable from one another.

Chronic Progressive Chorea.—Davison and his associates present three cases of chronic progressive chorea: one of Huntington's type, one of questionable Huntington's type and one arteriosclerotic. Histopathologically, all showed cortical and neostriatal changes. Two of the cases also showed cerebellar changes. The authors made an attempt to interpret the mechanism of chorea on a corticostriatal basis.

Archives of Surgery, Chicago

24: 531-714 (April) 1932

Surgical Treatment of Goiter, with Especial Reference to Operative Technic. M. R. Reid and W. deW. Andrus, Cincinnati.—p 531.
*Osteoblastic Osteoid Tissue-Forming Tumor of Metacarpal Bone. H L. Jaffe and L. Mayer, New York.—p. 550.
*Activity of Isolated Intestinal Segments. C. B. Puestow, Chicago—p. 565.
*Concretio Cordis: II. Cardiolysis for Concretio Cordis. I. A. Bigger, Richmond, Va.—p. 574.
*Squamous Cell Carcinoma of Kidney with Complete Infarction of Kidney as Sequel to Cancerous Thrombosis of Renal Artery. J. Rabinovitch, St. Louis.—p. 581.
*Effect of Hypertonic Solution on Cerebrospinal Fluid Pressure, with Especial Reference to Secondary Rise and Toxicity. G. Milles and P. Hurwitz, Chicago.—p. 591.
Osteogenic Sarcoma. C. F. Geschickter, Baltimore.—p. 602.
Sedimentation Test of Blood in General Surgery, with Especial Reference to Disease in Lower Right Quadrant and Mechanisms Involved. M. Grodinsky, Omaha.—p. 660.
Studies of Physiology of Liver: XXII. Van den Bergh Reaction in Jaundice Following Complete Removal of Liver. J. L. Bollman and F. C. Mann, Rochester, Minn.—p. 675.
*Transphrenic Spread of Disease: Report of Six Cases. E. S Groseclose and O. Swineford, Jr., University, Va.—p. 681.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S Judd, Rochester, Minn.; L. D. Keyser, Roanoke, Va.; J. Verbrugge, Antwerp, Belgium; A. A. Kutzmann, Los Angeles, and A. B. Hepler, Seattle.—p. 687.

Tumor of Metacarpal Bone.—Jaffe and Mayer describe an osteoid tissue-forming tumor of a metacarpal that began in a girl, aged 12 years. At first the tumor grew slowly. A biopsy was performed, the histologic sections showing osteoid tissue and numerous osteoblasts. The growth was slow for about the next two years, when it became very rapid. After growing rapidly for about six months, an encapsulated mass measuring 10 by 6.5 by 6 cm. was removed from the hand; section showed almost complete destruction of the metacarpal bone. The peculiar feature of this osteoblastic tumor was its capacity to produce large amounts of osteoid tissue, much of which was free from calcium. The tumor had some features common to osteogenic sarcoma but showed a complete absence of cartilage or cartilaginous elements in numerous sections. It was especially characterized by homogeneity of the histologic picture, a lack of polymorphism of the cells, and an absence of tumor giant cells. There has been no recurrence one and a half years after extirpation. The patient has gained 25 pounds (11.3 Kg.) and has remained free from metastases for over four years after the original biopsy, in March, 1927. The authors believe that the case demonstrates an instance of so-called osteoid chondroma of Virchow, which is an osteoid tissue-producing tumor, the prognosis of which is better than that of osteogenic sarcoma. It is their belief that, had extirpation of the metacarpal bone been delayed much longer, the tumor probably would have undergone biologic transformation and developed the malignant capacities of true osteogenic sarcoma.

Activity of Isolated Intestinal Segments.—Puestow isolated various segments of bowel from the intestinal tract and transplanted them onto the abdomen. It was observed that feeding stimulated an increase of muscular and secretory activity and hyperemia of these segments. Because food did not come in contact with the segments, the stimulus must have been carried by nervous or vascular pathways. Following division of all extrinsic nerves to these intestinal transplants, the response to food could not be clearly demonstrated. This suggested that the increased activity after feeding was at least partially due to extrinsic nervous control. Electrograms made of these various isolated segments of intestine revealed a characteristic curve of altered potential. They also showed a constant rate for a given segment under most conditions studied. The rate was most rapid in duodenal segments, less in jejunal segments and slowest in segments of the lower part of the ileum. Peritonitis and ether anesthesia were found to diminish this rate moderately.

Concretio Cordis.—Bigger considers decortication of the heart a formidable operation but one that is distinctly indicated for the relief of concretio cordis, which without surgical intervention is hopeless. The mortality rate is high and will of necessity continue to be so, but with improved operative technic one of the chief dangers, rupture of the heart, should be greatly diminished. If a satisfactory two-stage operation can be developed, the incidence of postoperative dilatation of the heart should be decreased.

Squamous Cell Carcinoma of Kidney.—Rabinovitch describes a case of squamous cell carcinoma of the kidney. The most interesting features of the case were the invasion of the renal artery by the tumor and the occlusion of its lumen. This resulted in complete infarction of the kidney. Similar instances of total occlusion of the renal artery by a cancerous thrombus have not heretofore been reported in the literature. This observation renders the case, therefore, unique. The various phases of cell metaplasia are discussed.

Spinal Fluid Pressure.—Milles and Hurwitz describe experiments in which they demonstrated that the reduction of cerebrospinal fluid pressure with single doses of hypertonic salt solution and dextrose is transient. A secondary rise occurs which reaches a point much higher than the original level. High concentrations of sodium chloride are definitely toxic. In view of these facts, it is probable that recurrent pressure symptoms and the occasional deaths reported are due to the secondary rise in spinal fluid pressure.

Transphrenic Spread of Diseases.—Groseclose and Swineford report six cases of transphrenic spread of disease. In only one case did the process originate above the diaphragm. In each of the other cases the primary lesion was in the abdomen, and transphrenic spread occurred directly from the under surface of the diaphragm, which was secondarily involved by cancer once, by acute hemorrhagic pancreatitis once, by tuberculosis once and by pyogenic infections twice. The spread was from the left subphrenic region to the left pleura in three cases, from the right subphrenic region to the right pleura in one case, from the right subphrenic region to both pleurae in one case, and from both pleurae and the pericardium to the region of the tail of the pancreas in one case. In one case the spread seemed to be quantitatively much greater on the right than on the left. Oddly enough, in half of the group of cases the transphenic spread occurred only on the left. Of the five pathways described by Lemon, Higgins and Graham by which lymph drains from the diaphragm, the sternal route was apparently illustrated once, the pulmonary route twice, and the fifth route, leading to the peripancreatic region, once. Simple spread from peritoneum to pleura occurred five times. The authors emphasize the importance of being mindful of the probability of transphrenic spread of intrathoracic or intra-abdominal disease. In order to anticipate some of the seemingly bizarre locations of the secondary transphrenic lesions, it is necessary to know the various routes by which materials reaching the rich diaphragmatic lymphatic plexus are transported to the blood stream.

California and Western Medicine, San Francisco

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Circulating Medical Library Service for Physicians: Comments on Iowa and Wisconsin Experiences. F. B. van Zandt, San Francisco.—p. 217.
Certain Economic Phases of Medical Practice. W. J. Stone, Pasadena.—p. 220.
*Fractures of Knee: "Bumper Type." N. A. Cary, Oakland.—p. 226.
*Ruptured Bladder: Method of Diagnosis: Report of Cases. H. W. Martin, Los Angeles.—p. 230.
Organized Medical Care: Its Relation to Persons of Low Income. R. L. Wilbur, Washington, D. C.—p. 233.
Contract Practice. R. G. Leland, Chicago.—p. 234.
Essays on History of Embryology. A. W. Meyer, San Francisco.—p. 241.

Fractures of Knee.—According to Cary, "bumper fractures of the knee" is the term applied to designate a complex lesion occurring when a person is struck by an automobile bumper or otherwise with sufficient force to produce a comminuted fracture of the head of the fibula, a fracture of the external tuberosity of the tibia with an avulsion of the tibiofibular joint and a rupture of the external lateral ligament of the knee joint. He emphasizes the fact that in this condition complete reduction is just as essential for a stable joint with good function as is a complete reduction of a Colles' or Pott's fracture. A method of treatment is outlined which he has found highly satisfactory to date. No special skill is required to obtain reduction. Caution is directed to a careful consideration of the peroneal nerve and to avoid rough pounding. With this method the period of disability has been reduced to half the usual time required, and permanent disabilities have been greatly reduced.

Ruptured Bladder.—Martin describes a method of diagnosis of ruptured bladder which has proved so reliable that he recommends its trial. The steps in the procedure are as follows: The patient should have an opportunity to void urine. The urine, if voided, should be examined microscopically for blood. If the patient is unable to void, a catheter is passed and the bladder urine is drawn off. If a catheter cannot be passed, a urethrogram should be taken to demonstrate the nature of the urethral complication or injury. The bladder should then be filled with sterile 5 per cent sodium iodide solution that has been boiled. The bladder should be filled to the point of discomfort, or, if this sensation is not reached, one stops at 300 cc., the amount injected having been carefully noted. A roentgenogram should then be taken, the patient being so placed that the entire bladder outline is shown on the plate. The sodium iodide solution should then be permitted to drain out of the bladder without any pressure being exerted, after which another picture should be taken. Air may be injected now in order to get a contrast cystogram. This will show the amount and location of any of the extravasated mediums, and thus another bit of evidence will be obtained. When the films are developed, one will either see the regular line of a normal bladder or a distorted, indistinct picture with extravasated iodide helping to outline the ruptured bladder.

Georgia Medical Association Journal, Atlanta

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Unexpected Postoperative Infections. R. M. Harbin, Rome—p. 127.
Different Phases of Encephalitis Lethargica. L. M. Gaines, Atlanta.—p. 134.
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Pellagra. C. H. Ferguson, Thomasville.—p. 139.
Narcolepsy: Report of Case with Symptomatic Relief. J. W. Brittingham, Augusta, and T. E. Rogers, Macon—p. 142.
Spontaneous Pneumothorax. C. H. Holmes, Atlanta.—p. 143
Diagnosis and Treatment of Common Skin Diseases, with Especial Reference to Precancerous Lesions. J. M. Sigman, Macon.—p. 146.

Journal of Biological Chemistry, Baltimore

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*Study of Certain Metals in Prevention of Nutritional Anemia in Rat. J. M. Orten, F. Aline Underhill and R. C. Lewis, Denver.—p. 1.
Polycythemia in Rat on Milk-Iron-Copper Diet Supplemented by Cobalt. J. M. Orten, F. Aline Underhill, E. R. Mugrage and R. C. Lewis, Denver.—p. 11.
Study of Blood Glutathione. V. Schelling, Detroit.—p. 17.
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Metabolism of Phospholipids: V. Relationship Between Amount of Fat Ingested and Degree of Unsaturation of Phospholipids and Neutral Fat in Tissues of Rat. R. G Sinclair, Rochester, N. Y.—p. 103.
Antineuritic Vitamin: II. Removal of Impurities by Oxidizing Agents. R. J. Block and G. R. Cowgill, New Haven, Conn.—p. 127.
*Mucoprotein as Normal Constituent of Gastric Juice. D. R. Webster and S. A. Komarov, Montreal, Canada.—p. 133.
*Vital Need of Body for Certain Unsaturated Fatty Acids: I. Experiments with Fat-Free Diets in Which Sucrose Furnishes Sole Source of Energy. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 143.
Id.: II. Experiments with High Fat Diets in Which Saturated Fatty Acids Furnish Sole Source of Energy. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 157.
Sparing Action of Fat on Vitamin B: II. Rôle Played by Melting Point and Degree of Unsaturation of Various Fats. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 165.
Id.: III. Rôle Played by Glycerides of Single Fatty Acids. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 179.
*Crystalline Vitamin D. C. E. Bills and F. G. McDonald, Evansville, Ind.—p. 189.
*Calcium and Phosphorus Studies: I. Effect of Calcium and Phosphorus of Diet on Tetany, Serum Calcium and Food Intake of Parathyroidectomized Rats. D. H. Shelling, with assistance of Dorothy E. Asher, Baltimore.—p. 195.
*Id.: II. Effect of Diet and of Viosterol on Tetany and on Serum Calcium of Parathyroidectomized Rats. D. H. Shelling, with assistance of Dorothy E. Asher, Baltimore.—p. 215.
Id.: III. Source of Excess Serum Calcium in Viosterol Hypercalcemia. D. H. Shelling, with assistance of Dorothy E. Asher, Baltimore.—p. 229.
Diffusible and Nondiffusible Blood Serum Calcium Following Intravenous Injections of Calcium Salts. R. G. Smith and Helen R. Sternberger, Ann Arbor, Mich.—p. 245.
Carbohydrate Changes During Anaerobiosis of Mammalian Muscle. Gerty T. Cori, Buffalo.—p. 259.
Osmotic Behavior of Water of Blood Serum. F. W. Sunderman, Philadelphia.—p. 271.

Prevention of Nutritional Anemia.—Orten and his associates describe experiments in which they demonstrated that inorganic iron fails to prevent the development of a nutritional anemia in the rat on a milk diet, whereas iron supplemented by copper permits the maintenance of an approximately normal hemoglobin level. Iron supplemented by manganese fails to prevent the development of nutritional anemia. A mixture of manganese, cobalt, nickel and zinc, supplementing iron, does not have a prophylactic action in nutritional anemia, while the same mixture plus copper prevents a decrease in the hemoglobin level. Evidence of any significant toxic effect of manganese, cobalt, nickel or zinc was not observed. Of all the metals studied, copper alone has the ability to supplement iron in preventing the nutritional anemia of the rat.

Mucoprotein as Normal Constituent of Gastric Juice.—Webster and Komarov believe sufficient data have been advanced to establish the presence in the freshly secreted gastric juice of a protein exhibiting the general properties of a mucoprotein. The striking similarity in the elementary composition of different samples obtained from several animals and its variance from that of the mucus of the surface epithelium point to this being a *sui generis* chemical body, secreted by the cells of the gastric glands themselves.

Unsaturated Fatty Acids in Diet.—Evans and Lepkovsky confirm the fact that a specific deficiency disease is produced on rigidly fat-free diets and is cured by the addition of certain unsaturated fatty acids. Vitamin B was definitely ruled out as a limiting factor in this deficiency. Corn starch and rice starch were effective in curing the deficiency, whereas potato starch was ineffective. The curative carbohydrates owe their effectiveness to their slight but important content in unsaturated fatty acids—presumably linoleic acid. Hog liver glycogen, whether prepared by hydrolysis with alkali or precipitation with trichloracetic acid, was ineffective.

Crystalline Vitamin D.—Bills and McDonald state that translation into international units of the potencies reported for several crystalline preparations of vitamin D reveals wide variation in antirachitic value. Under suitable conditions a resinous preparation can pass into the crystalline state without change of purity. The crystalline state is evidence of relative, not absolute, purity in vitamin D. The best crystalline preparations as yet described are probably isomorphous mixtures containing a large percentage of inert material.

Calcium and Phosphorus Studies: I.—Shelling reports that the calcium and phosphorus content of the diet is a determining factor in the presence or absence of tetany in parathyroidectomized rats. Low calcium or high phosphorus diets are conducive to parathyroprivic tetany, while high calcium or low phospharus diets are ameliorative. The serum calcium concentrations vary with the severity of the tetany and with the calcium and phosphorus intake. Cachexia parathyreopriva was found to depend on the food intake. Parathyroidectomized rats refuse to eat tetany-inducing diets and thus lose weight, but they consume optimal amounts of foods which relieve or prevent their tetanic manifestations. The anorexia was present when dietary phosphorus was in a form that could be utilized by the animal organism but absent when the phosphorus salts could not be utilized. Sodium metaphosphate and thiosulphate belong to the latter group. An analogy is drawn between the anorexia of parathyroidectomized rats on tetany-inducing diets and the vomiting of parathyroprivic dogs on similar rations. Attention is called to the importance of phosphorus as a factor in the study of parathyroid tetany.

Id.: II. Effect of Diet and of Viosterol on Tetany of Parathyroidectomized Rats.—According to Shelling, viosterol in fairly large doses is capable of raising the serum calcium levels and of ameliorating the symptoms of tetany of parathyroidectomized rats kept on very low calcium diets. Large doses of viosterol may raise the serum calcium of parathyroidectomized rats from tetanic to hypercalcemic levels, even in the absence of either calcium alone or of both calcium and phosphorus from the food. These experiments would seem to indicate that the activity of viosterol in raising the serum calcium levels may be independent of the parathyroids. The author discusses the relation of the parathyroids to the activity of therapeutic doses of viosterol.

Journal of Bone and Joint Surgery, Boston

14: 229-470 (April) 1932

Operative Treatment of Fractured or Displaced Semilunar Cartilage: Comparison of Opinions Concerning Removal of Meniscus. M. Boppe, J. Braine and A. Mouchet, Paris, France; P. J. Erlacher and A. Wittek, Graz, Austria; R. Galeazzi, Milan, Italy; W. E. Gallie, Toronto, Canada; J. Hass, Vienna, Austria; M. S. Henderson, Rochester, Minn.; M. Jansen, Leiden, the Netherlands; A. Jirásek, Prague, Czechoslovakia; R. Jones and T. P. McMurray, Liverpool, England; S. Kostlivý, Bratislava, Czechoslovakia; J. Petřivalský, Brno, Czechoslovakia; J. L. Potter, Evanston, Ill.; V. Putti, Bologna, Italy; W. O. Sherman, Pittsburgh; F. Steinmann, Bern, Switzerland; L. Tavernier, Lyons, France, and H. Turner, Leningrad, U. S. S. R. —p. 229.
Consideration of Relative Effectiveness of Operative Procedures for Paralytic Talipes Calcaneus. R. Whitman, New York.—p. 242.
*Streptococcus Viridans Osteomyelitis. E. L. Compere, Chicago.—p. 244.
*Trochanteric Transplantation in Treatment of Fractures of Neck of Femur. E. Jones, Los Angeles.—p. 259.
Backache: Anatomic Consideration. T. A. Willis, Cleveland.—p. 267.
*Importance of Periarticular Innervation in Pathologic Physiology of Sprained Joints. A. Brunschwig, Chicago, and A. Jung, Strasbourg, France.—p. 273.
Congenital Dislocation of Hip in Older Subjects: Based on Study of Sixty-Six Open Operations. P. C. Colonna, New York.—p. 277.
*Congenital Dislocation of Hip Treated by Open Operation: Report of Seventy-Two Cases. M. B. Howorth and H. W. Smith, New York. —p. 299.
Perthes' Disease. L. E. Snodgrass, Philadelphia.—p. 314.
Range of Active Abduction and Lateral Rotation at Hip Joint of Men. A. R. Boscoe, San Francisco.—p. 325.
Plastic Operation for Relief of Recurrent *Slippings and Dislocation* of Patella. L. C. Wagner, New York.—p. 332.
Operative Treatment of Clawfoot. C. H. Heyman, Cleveland.—p. 335.
Calcinosis Interstitialis Universalis. G. F. Skossogorenko, Kiev, the Ukraine, U. S. S. R.—p. 339.
Pin Fixation in Dislocation at Hip Joint. S. L. Haas, San Francisco. —p. 346.
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*Longitudinal Fractures of Patella. P. W. Lapidus, New York.—p. 351.
Making a New Ligament in Ankle Sprain. H. Nilsonne, Stockholm, Sweden.—p. 380.
Rare Accessory Bone of Foot. A. B. Ferguson, New York.—p. 382.
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Lateral Dislocation of Vertebra: Report of Three Cases. J. D. Lawson, Woodland, Calif.—p. 387.
Dislocation of Knee Joint: Report of Case. H. H. Ritter, New York. —p. 391.
Radio-Ulnar Synostosis: Historical Review and Case Report. S. Fahlstrom, Chicago.—p. 395.
Congenital Bilateral Radio-Ulnar Synostosis: Report of Case. B. N. E. Cohn, Pittsburgh.—p. 404.
Giant-Cell Tumor of Os Calcis: Report of Case Treated by Resection and Tendon Transplantation. L. M. Miltner and F. E. Wan, Peiping, China.—p. 406.
Giant-Cell Tumor (Sarcoma?) of Astragalus. A. J. Davidson and A. D. Kurtz, Philadelphia.—p. 410.
Multiple Spontaneous Fractures of Unknown Origin. E. B. Kaplan, New York.—p. 412.
Rupture of Biceps Tendon. H. D. Sonnenschein, New York.—p. 416.
Restoration of Bony Density and Contour Following Extreme Atrophy and Collapse of Fifth and Sixth Cervical Vertebrae. S. Selig and B. Eliasoph, New York.—p. 417.
Conservative Treatment of Incomplete Dislocation of Acromioclavicular Joint. A. H. Trynin, Brooklyn.—p. 421.
Special Saw and Retractor for Plastic Operation on Femur. G. K. Coonse, Columbia, Mo.—p. 425.
Bone Skids. R. M. Yergason, Hartford, Conn.—p. 427.

Streptococcus Viridans Osteomyelitis.—Compere discusses the etiology of osteitis that is characterized by a fibroblast and giant-cell proliferation with bone destruction and new bone formation. He reports a case in which a strain of green-producing streptococcus grew in cultures of a lesion in the neck of the astragalus, which presented a microscopic picture similar to that of localized osteitis fibrosa without cyst formation. Clinically and bacteriologically it was a low-grade pyogenic infection and was classed as Streptococcus viridans osteomyelitis. He also reports a second case, which was clinically and pathologically similar to the first, except for bone proliferation, but in which the cultures were negative. That trauma may be a factor in localizing the infection is again suggested by these cases, but the opinion is expressed that reaction to trauma and hemorrhage could not alone account for the cortical absorption and the extensive new bone formation noted in the second case.

Trochanteric Transplantation in Fractures of Femoral Neck.—Jones summarizes the advantages of open operation by the trochanteric bone-graft method in fractures of the neck of the femur as follows: (1) early and accurate replacement of displaced fragments with assurance that no interposition of tissue exists; (2) bridging of the fracture line with an autogenous bone graft, providing firm internal fixation, the graft also acting as a source of calcium for the healing granulation tissue, and (3) early reestablishment of blood supply between the head and neck of the femur in an area where blood supply is minimal. He particularly emphasizes the conservatism of this method and the ease with which through a single incision the hip joint is widely exposed, an adequate bone graft is obtained from the trochanter as part of the operative approach, and the direction and position of the transplant are accurately determined.

Periarticular Innervation in Sprained Joints.—According to Brunschwig and Jung, the sensibility of a joint is primarily a periarticular sensibility, due to the abundance of nerve endings in the joint capsules and periarticular ligaments. In sprains, pain is due primarily to trauma of the periarticular innervation. Reflex muscular rigidity, involving the injured joint, also has its origin in the traumatized nerves of the joint capsule and ligaments. Periarticular injections of procaine hydrochloride have a definite therapeutic value in the treatment of sprains. With the pain and reflex muscular rigidity abolished, almost normal function is possible. In some instances the improvement is more or less permanent; in other cases several injections are necessary.

Congenital Dislocation of Hip.—A study of eighty-two open reductions of congenital dislocation of the hip, with a follow-up examination of seventy-two of the hips, is presented by Howorth and Smith, with details of the preoperative examination and treatment, the operative observations and procedure, postoperative care, and the results several years after operation. It is definitely shown that a fairly large percentage of congenital dislocations of the hip cannot be reduced, or the reduction maintained, by closed operation because of anatomic abnormalities about the acetabulum. It is further demonstrated that roentgenograms taken with the patient standing and under traction, as well as the ordinary recumbent views, are essential for a thorough study of these hips both before and after operation. It is particularly important that the pathologic condition and mechanism at the hip be carefully studied at operation. It is the authors' practice to study the hip at operation on exposure of the capsule, after opening the capsule, and after removing the ligamentum teres, to determine the factors interfering with reduction and stability, and they test the stability of the hip after reduction with upward pressure on the leg during gradual adduction and in various positions of rotation. The rotation procedure is valuable in determining the necessity for correction of anteversion. Furthermore, there is so much individual variation in these hips that they cannot be grouped together indiscriminately and compared superficially in attempts to present the best apparent results.

Longitudinal Fractures of Patella.—Lapidus calls attention to typical longitudinal fracture of the patella in a vertical sagittal plane, usually over the junction of the outer and middle fourths of the patella. This fracture is not as uncommon as is usually believed, but it is rarely recognized. Correct diagnosis of longitudinal fracture of the patella is important for the purpose of proper treatment, especially in legal cases. The clinical picture is clear cut: history of injury, localized linear tenderness over the lateral border of the patella, effusion in the knee joint (usually hemorrhagic), comparatively negligible disability. Special technic of roentgenography of the patella should be used in every case with these symptoms in which there is a suspicion of longitudinal fracture. Both knees should always be roentgenographed in order to differentiate the fracture from congenital anomaly of the patella. The therapeutic value of repeated aspiration of the effusion in the knee joint is emphasized in cases of longitudinal fracture of the patella. Longitudinal fracture of the patella may lead to a quite prolonged disability when overlooked. If properly recognized and treated, complete recovery within six to eight weeks may be expected. Operative treatment should not be employed in these fractures.

Journal of Comparative Psychology, Baltimore

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Experiment on Backward Associations in Animal Learning. M. E. Bunch and W. R. Lund, St. Louis.—p. 143.
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Mechanism of Vision: V. Structure and Image-Forming Power of the Rat's Eye. K. S. Lashley, Chicago.—p. 173
Maze Learning of Turtle. O. L Tinklepaugh, New Haven, Conn. —p 201.
Multiple Delayed Reaction with Chimpanzees and Monkeys. O. L. Tinklepaugh, New Haven, Conn.—p. 207.
Ontogeny of Embryonic Behavior in Aves: III. Structural and Environmental Factors in Embryonic Behavior. Zing Yang Kuo, Nanking, China.—p. 245.
Note on Brightness Vision in White Rat. J. E. Slater and N. L. Munn, Pittsburgh.—p. 273.
Behavior of Albino Rats in Choosing Food and Stimulants. M. F. Hausmann, Baltimore.—p. 279.

Journal of Lab. and Clinical Medicine, St. Louis

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Sputum Examination in Pulmonary Tuberculosis. M. Pinner, Tucson, Ariz.—p. 611.
*Isolation and Identification of Pathogenic Bacteria in Feces. L. C. Havens, Montgomery, Ala.—p. 628.
*Examination and Identification of Protozoa. E. C. Faust, New Orleans. —p. 639.
Intestinal Protozoa in Clinical Medicine. K. M. Lynch, Charleston, S. C.—p. 661.
*Bacterial Mutations. F. d'Herelle and Ruth Beecroft, New York. —p. 667.
Bacteriophage in Clinical Medicine. N. W. Larkum, Lansing, Mich. —p. 675.
Observations on Bacteriophage· III. Treatment of Colon Bacillus Infections of Urinary Tract by Means of Subcutaneous and Intravesical Injections of Bacteriophage Filtrates: Detailed Case Reports: Methods for Preparation of Filtrates. D. M. Cowie and W. C. Hicks, Ann Arbor, Mich.—p. 681.

Pathogenic Bacteria in Feces.—Havens considers the detection of pathogenic bacteria in feces as one of the most complicated bacteriologic problems which a diagnostic laboratory encounters. Their isolation, in the first place, is attended by many technical pitfalls, and any significant organisms which may be found require intelligent and careful work for their identification. There are many intestinal bacteria which closely resemble the known pathogens but which so far have no definitely ascribed rôle. Their significance is uncertain and their presence is often confusing. Hence, one can hardly be too careful in the procedures used for purposes of identification. In the majority of instances, of course, such as typhoid, the offending organism is readily identified by comparatively simple cultural and agglutinative reactions. But when one approaches the paratyphoid group and, particularly, the dysenteries, skill and experience are needed. It is here, in this group of diseases, owing to their comparatively infrequent occurrence and their vague clinical symptoms, that the laboratory is called on to establish the diagnosis. Thus, even though such examples appear with comparative infrequency, it is nevertheless essential that the laboratory be prepared to make an intelligent examination.

Examination and Identification of Protozoa.—According to Faust, the protozoa found in human tissues and exudates include forms belonging to all four major groups of the phylum Protozoa, namely, the Rhizopoda, as illustrated by Endamoeba histolytica; the Mastigophora, as illustrated by the intestinal flagellates and the trypanosomes; the Sporozoa, as illustrated by the malaria plasmodia, and the Ciliata, as illustrated by Balantidium coli. Some of these organisms are strictly tissue parasites; others may be regarded as facultative pathogens, and still others are harmless forms of a coprozoic nature living in or passing through the intestinal tract. For purposes of convenience the author considers these protozoa under two categories, (1) those living in the intestinal tract and adjacent organs, and (2) those primarily involving the hematopoietic organs, blood stream and other body tissues.

Bacterial Mutations.—D'Herelle and Beecroft call attention to the fact that variations which occur among living beings may result, in general, from three different phenomena: 1. The existence of a life cycle such as one finds in the case of protozoa and insects. This phenomenon is easy to recognize, for it is cyclic; the variations are "ordinate." All the characters vary together as a whole. Moreover, in a species which has a life cycle, all the individuals suffer the same variation when placed in identical environments. 2. The adaptation to new external conditions. This phenomenon is not cyclic. One can produce easily such variations with bacteria when they are cultivated in what one might term "abnormal" mediums; but generally such variations are transitory. The character "sporulation" is the only one that undergoes a permanent modification after a strain has been cultivated or exposed to the presence of certain antiseptics. 3. Adaptation to new internal conditions. New internal conditions always result from the subjection of an organism to a parasite. Such parasitism is termed "symbiosis" when the host adapts itself to this new condition. This adaptation is always correlative to modifications of the characters of the host (as well as modifications of the characters of the parasite). The authors describe investigations which show that the principal cause of variations among bacteria is a result of a symbiosis and certainly not the result of a life cycle. The variations are not cyclic but appear in a disorderly fashion. What is more characteristic is that each character may vary by itself as an entity, without having any repercussive effect on the other characters. If one considers, for example, the three characters "virulence," "agglutinability" and "fermentation," one observes that there is no relation between the variation of one of them and the variation of the others.

Journal of Pharmacology & Exper. Therap., Baltimore

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Toxic Action of p-Diazoiminobenzene Hydrochloride and of Its Additive Compound with Cupric Chloride. A. C. White.—p. 409.
*Studies on Pharmacology of Metaphen and Acriflavine. P. Jeanette Crittenden, Chicago.—p. 423.
Effect of Phosphate and Bicarbonate Buffers on Ionization of Calcium Salts in Physiologic Salt Solutions. W. F. von Oettingen and R. E. Pickett, Cleveland.—p. 435.
Chemotherapy of Quinoline Compounds: III. Action of Certain Quinoline Compounds on Paramecia. P. Brahmachari, U. Brahmachari and R. Banerjea, Calcutta, India.—p. 445.
*Further Studies of Control of Experimentally Produced Convulsions. H. M. Keith, Rochester, Minn.—p. 449.
Stimulant Action of Nicotine on Spleen. F. D. McCrea, Cleveland.—p. 457.
Pharmacologic Action of Some New Choline Derivatives in Relation to Their Chemical Constitution. W. F. von Oettingen and D. F. Eveleth, Cleveland.—p. 465.
Intact Intestine in Nonanesthetized Dogs as Affected by Anthraquinone (Emodin) Cathartics. C. M. Gruber, W. T. K. Bryan and L. K. Richardson, St. Louis.—p. 479.

Pharmacology of Metaphen and Acriflavine.—Crittenden reports that metaphen administered intravenously, except in enormous doses, does not have any effect on the blood pressure, heart rate and respiration of either barbitalized or unanesthetized dogs. In general, intravenous injection of therapeutic doses (0.15 mg. per kilogram) causes a marked leukocytosis, accompanied by a proportional increase in the different forms of leukocytes. In one dog out of ten a leukopenia resulted. It has no effect in similar doses on the fragility of erythrocytes. The minimum lethal dose of metaphen in dogs is 3.5 mg. per kilogram, which on the basis of its mercury content is equivalent to the minimum lethal dose of mercuric chloride. Certain preparations of acriflavine are definitely toxic, causing marked changes in the heart rate, circulation and respiration, and nausea and vomiting in intravenous doses of from 2 to 5 mg. per kilogram. A neutral preparation of acriflavine can be prepared which in doses of from 1 to 2 mg. per kilogram causes either no or only slight changes in the heart rate, respiration and blood pressure. The author believes that preparations of acriflavine should be tested on unanesthetized animals before they are used for intravenous therapy. Even the least toxic preparations of acriflavine in small doses stimulate and in larger doses depress the peripheral vagal mechanism in the heart. The author's results indicate that the chief point of action of acriflavine on the blood pressure is peripheral.

Experimentally Produced Convulsions.—Keith states that in rabbits the anticonvulsive effect of diacetone alcohol given by mouth is definite. A considerably larger amount of it is required than is required of phenobarbital to produce a similar effect. The latter, however, is much more toxic in larger doses and causes considerably more irritability to sensory stimuli. The anticonvulsive properties of diacetone alcohol depend on the acetone portion of the molecule.

Kentucky Medical Journal, Bowling Green

30: 167-236 (April) 1932

Difficulties in Diagnosis of Empyema and Surgical Considerations. G. G. Altman, Louisville.—p. 169.
Roentgen Diagnosis of Empyema. V. Blythe, Paducah.—p. 172.
Surgical Treatment of Empyema. C. C. Howard, Glasgow.—p. 174.
Etiology in Diagnosis of Heart Disease. O. P. Nuckols, Pineville.—p. 179.
Certain Problems in Treatment of Fractures. M. D. Flanary, Pikeville.—p. 183.
Preoperative and Postoperative Treatment in Abdominal Surgery. I. Abell, Louisville.—p. 187.
Criteria for Diagnosis of Heart Disease. W. B. Troutman, Louisville.—p. 194.
Roentgen Ray in Diagnosis of Cardiac Disease. J. C. Bell, Louisville.—p. 196.
Operative Risk in Heart Disease. E. F. Horine, Louisville.—p. 197.
Treatment of Heart Diseases. S. C. Frankel, Louisville.—p. 199.
Effect of Disease on Calcium Content of Blood. J. E. Winter, Louisville.—p. 204.
Arterial Conditions of Surgical Importance. J. G. Sherrill, Louisville.—p. 210.
Intravascular Complications in Surgery: Venous Complications. W. Hume, Louisville.—p. 215.
Id.: Pulmonary System. L. Frank, Louisville.—p. 219.
Was It an Error in Diagnosis? C. G. Lucas, Louisville.—p. 226.
Rupture of Rectus Abdominis Muscle. M. Flexner, Louisville.—p. 230.
Perthes' Disease: Case Report. O. R. Miller, Louisville.—p. 231.
Torsion of Normal Ovary and Tube with Rupture of Ovary and Review of All Literature to Date: An Addendum. C. Baron, Covington.—p. 233.

Medical Bull. of Veterans' Adm., Washington, D. C.

8: 257-330 (April) 1932

*Surgical Treatment of Pulmonary Tuberculosis. C. A. Hedblom and W. H. Watterson.—p. 257.
*Spinal Anesthesia: Report of Its Use in Five Hundred and Eighteen Cases. V. Roberts, S. B. Woodward and W. F. Coakley.—p. 267.
Intravenous Pyelography with Use of Iopax. C. D. Allen and S. L. Edwards.—p. 277.
Massive Collapse of Lung, with Spontaneous Pneumothorax. W. H. Crede.—p. 280.
Hereditary Factors in Schizophrenia: Comparison of Data. P. M. Jerrell.—p. 287.
Malaria Therapy in Agitated Cases of Paresis. R. T. O'Neil.—p. 291.
*Early Diagnosis of Neurosyphilis. R. S. Hubbs.—p. 295.
*Death Certificate and Causes of Death. G. H. Crofton.—p. 298.
Dental Foci in Relation to Ocular Disease: Case Reports. J. P. Cassity.—p. 304.

Surgical Treatment of Pulmonary Tuberculosis.—According to Hedblom and Watterson, phrenic operations alone usually fulfil only partially the requirements of active treatment of tuberculosis, and they are inferior to other methods of collapse therapy, especially in their effect on cavities in the upper lobe; therefore phrenic exeresis as an independent intervention has only a limited application. Attention to certain symptoms is of value in handling cases. Thus, cardiac embarrassment following thoracoplasty due to air or fluid in the pleural cavity may be relieved by aspiration. Even if the heart can withstand any added load because of the collapsed condition of the chest wall and intrapleural air or fluid, the ultimate degree of chest wall collapse following thoracoplasty may be much interfered with. The authors believe that artificial pneumothorax treatment should last for at least two years unless it is complicated by adhesions, in which case major surgical procedures should be considered to maintain therapeutic collapse.

Spinal Anesthesia.—Roberts and his associates review a series of 518 cases of spinal anesthesias from the standpoint of age of patient, of type of operation, of risk, and of technic of administration, with a discussion of postoperative reactions and of the advantages and disadvantages of spinal anesthesia. No mortality attributable to the anesthetic occurred in this series. One standard technic, the Labat, was used throughout. A carriage convertible into several positions was used. The patient may be quickly put in the Trendelenburg position and transported in that position, which is of prime importance when spinal anesthesia is employed. While recent literature offers experimental evidence as to possible injury to the central nervous system and its coverings due to spinal anesthesia, clinically the authors have been unable to observe any permanent changes.

Early Diagnosis of Neurosyphilis.—Hubbs states that in the vast majority of cases at the time the first symptoms of neurosyphilis appear there are neurologic changes present which help to confirm a diagnosis of this disease. In the making of a diagnosis of neurosyphilis in the early stages of the disease a physician is aided by the fact that many such patients have positive blood Wassermann and Kahn reactions. Yet he must not consider neurosyphilis ruled out by negative blood reactions, since 8.8 per cent of a group of patients studied by the author had negative blood Wassermann or Kahn reactions at or near the time of onset.

Death Certificate and Causes of Death.—Crofton gives the following reasons why the facts as stated on the death certificate by the attending physician may be of the greatest legal and social importance: 1. Pensions or life insurance may depend on proper evidence of the facts and cause of death. 2. Certificates of death, or certified copies, are constantly required in courts and elsewhere to establish necessary facts. 3. Titles and rights to inheritance may be jeopardized by the failure of records. 4. Deaths should be registered so that public health agencies—national, state and municipal—may know the causes of death and act promptly to prevent epidemics. 5. Deaths should be registered promptly in order that the success or failure of all measures attempted in the prevention of disease may be accurately determined. 6. Deaths should be registered, that individual cities and localities may learn their own health conditions by comparison with the health condition of other communities and determine thereby the best courses of public activity. 7. Deaths should be registered, that homeseekers and immigrants may be guided in the selection of safe and healthful homes.

Medical Journal and Record, New York

135: 365-416 (April 20) 1932

Bactericidal Power of Antitoxins and Its Limitations: Clinical and Bacteriologic Study. F. Herb, Chicago.—p. 365.
Acute Urinary Retention Due to Hematocolpometra. A. H. Mouradian, Greenwich, Conn.—p. 369.
Detoxication and Degenerative Diseases. A. B. Jackson, Washington, D. C.—p. 370.
Modern Conception of Deafness. H. Hays, New York.—p. 374.
Electrocardiogram in Coronary Occlusion. L. H. Sigler, Brooklyn.—p. 376.
Constitutional Angiohypotonia or Idiopathic Permanent Arterial Hypotension. A. Ferrannini, Naples, Italy.—p. 381.

New England Journal of Medicine, Boston

206: 771-826 (April 14) 1932

Jacksonian Attacks and Brain Tumor. E. W. Taylor, Boston.—p. 771.
Metabolic Rate in "Hypnotic Sleep." J. C. Whitehorn, Waverly, Mass.; H. Lundholm, Durham, N. C.; E. L. Fox, Boston, and F. G. Benedict, Washington, D. C.—p. 777.
Physician's Fees and Hospital Bills. M. M. Davis, Chicago.—p. 781.
Management of Permanent Colostomies. W. M. Shedden, Boston.—p. 792.
Acute Salpingitis in Pregnancy. J. D. Stewart, Boston.—p. 800.

New York State Journal of Medicine, New York

32: 437-514 (April 15) 1932

Compulsory Health Insurance Abroad. E. Koffler, New York.—p. 437.
*Radium Poisoning. F. B. Flinn, New York.—p. 446.

Radium Poisoning.—Flinn states that, when radium is absorbed into the body, the immediate surrounding tissue is subjected to a bombardment of alpha and beta particles as well as to gamma rays. These alpha and beta particles are destructive to tissues under certain conditions. The alpha particle is the most powerful physical agent known to man. The change in the blood picture is due to the action of the radium on the bone marrow and lymph nodes. Anemia and drop in white cells finally result and the drop in white cells may indicate the terminal end. The blood picture in human beings varies somewhat during the clinical history and in individual cases, so that there is no characteristic radium blood picture. Anisocytosis, poikilocytosis and nucleated red cells are frequently seen. The radium tends to cause the cells of the body to revert to the primitive cells, as is seen on histologic examination of tissues. A certain percentage of cases terminate in sarcoma, generally those in which small amounts of radium have been present over a long period of time. Because the blood picture is unreliable for the detection of radium poisoning, dependence must be placed on the electroscope. In the treatment of the condition, operations are contraindicated. In jaw cases the wound should be kept draining as freely as possible. Liver, iron injections and blood transfusions do not produce any permanent improvement in the blood picture. The author has felt at times that the iron metabolism has been interfered with in these cases. His best results have been obtained by having the patients eat fruits, especially stewed apricots, which are high in iron and copper. High calcium therapy is indicated except when elimination is attempted. If the patient is kept on from 20 to 30 drops of viosterol three times a day, there is an elimination over a long period of time. The difficulty lies in the fact that one is dealing with an already damaged bone condition and that any intensive treatment will further decalcify the bones which lack the ability for regeneration.

Occupational Therapy and Rehabilitation, Baltimore

11: 71-154 (April) 1932

Educational and Vocational Program for Patients in Convalescent Hospitals and Sanatoriums. J. H. Holbrook, Hamilton, Ont., Canada. —p. 71.
Healing Influence of Work and Play in Mental Hospital. G. H. Stevenson, Whitby, Ont., Canada.—p. 85.
Recreation for Mental Health Patients: Experiment Conducted in Outpatient Department of a General Hospital. Marguerite Emery, New York.—p. 91.
Introduction to Graphic Presentation of Occupational Therapy Activities in Queens and Other Hospitals in Honolulu. Louise S. Marshall. —p. 101.
Need of Occupational Therapy for Cardiac Patients. P. D. White, Boston.—p. 105.
Need of Occupational Therapy in General Hospital. W. F. Wood, Collingswood, N. J.—p. 109.
Developing Group Solidarity in Occupational Therapy Shop. Olive Caldwell, Worcester, Mass.—p. 117.
Occupational Therapy for Crippled Children. Lillian L. Spencer, Chicago.—p. 123.
Some Social Aspects of Mental Reeducation. J. E. Davis, Perry Point, Md.—p. 129.
Mexican Trades and Crafts: III. M. M. C. B. Knox.—p. 135.

Public Health Reports, Washington, D. C.

47: 837-882 (April 8) 1932

Relative Incidence of Typhoid Fever in Urban and Rural Areas of Tennessee. D. F. Milam and E. Sibley.—p. 839.

47: 883-929 (April 15) 1932

*Trachoma and Trachoma Prevention Work in Missouri. C. E. Rice and J. E. Smith.—p. 888.

Trachoma Prevention Work in Missouri.—Rice and Smith report that the incidence of trachoma in Missouri seems much higher in the southern part of the state than in the north. One area in southern Missouri of 2,506 square miles shows a trachoma incidence rate of almost 20 per thousand. The probable percentage of trachoma blind in Missouri under the present legislative definition of blindness is 3.9 per cent of the total number of trachoma cases. Of 3,893 trachoma cases seen, 65 per cent were in males. Of 1,154 complete records studied, 88 per cent showed the presence of pannus involvement of the cornea. There was corneal damage sufficient to bring vision down to 20/200 or worse in both eyes in 12.5 per cent of all cases seen. Of 1,148 individuals hospitalized at Rolla, 7.1 per cent have been hospitalized three or more times. The authors estimate that there are 17,000 active and inactive cases of trachoma in Missouri at the present time.

Tennessee State Medical Assn. Journal, Nashville

25: 127-164 (April) 1932

Consideration of Carcinoma of Large Bowel. F. W. Rankin and J. T. Priestley, Rochester, Minn.—p. 127.
Art of Healing and Science of Medicine. C. P. Fox, Sr., Greeneville. —p. 134.
Inversion of Uterus. G. W. Smither and V. D. Holloway, Knoxville. —p. 140.
Endometrial Biopsy by Suction. J. C. Burch and H. H. Klinger, Nashville.—p. 142.
Affections of Common Bile Duct, with Especial Reference to Surgical Management. R. B. White, Jackson.—p. 143.
Pellagra. S. J. Fentress, Goodlettsville.—p. 149.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. *Single case reports and trials of new drugs are usually omitted.*

Brain, London

55: 1-143 (March) 1932

*Myopathic Family, with Hypertrophic, Pseudohypertrophic, Atrophic and Terminal (Distal in Upper Extremities) Stages. S. Barnes.—p. 1.
*Familial Periodic Paralysis: Description of Six Cases Occurring in Three Generations of One Family. T. Kay Maclachlan.—p. 47.
Atrophy and Degeneration in Muscle Spindle. Sarah S. Tower.—p. 77.
Inorganic Constituents of Cerebrospinal Fluid: III. Magnesium and Calcium in Meningitis. R. A. McCance and Elsie Watchorn.—p. 91.
*Tonic Pupils and Absent Tendon Reflexes: Benign Disorder Sui Generis, Its Complete and Incomplete Forms. W. J. Adie.—p. 98.
Part Played by Sympathetic System as an Afferent Mechanism in Region of Trigeminus. H. Helson, Foreword by C. H. Frazier.—p. 114.
Suprasellar Cholesteatomas. H. Olivecrona.—p. 122.

Myopathic Family.—Barnes describes a variant of myopathy, occurring in many members of a single family, which passed through four phases—hypertrophic, pseudohypertrophic, atrophic and terminal—the last stage being associated with a distal atrophy of the upper extremities. Other clinical characteristics were early loss of tendon reflexes, late onset and slow progress, an almost constant association with adipositas universalis, and a relative absence of abortive forms and of polymorphism. The author states that a large and increasing body of evidence is available, which goes to prove that myopathy (muscular dystrophy) is determined at the birth of the ovum and is derived as a factor or as factors inherited from one or both of the two gametes which form the zygote. In rare cases, a new mutation (variation in a normal gene) may arise and be the cause of the condition in the individual developed from that zygote and be transmitted to his descendants. As to whether the effects of the mutant are manifested directly during the development of the individual, or indirectly through the endocrine glands, has not been established. The frequent association of myopathy with adiposity and other evidence of endocrine imbalance may be interpreted on strictly genetic lines, the hormone disturbance being a secondary effect of the mutant. In those cases in which microbic disease, trauma, overwork, and so on, are antecedent in the history, they are merely factors which determine the onset or accelerate the progress of the disease in an individual who is a potential myopathic, i. e., a genotype carrying the mutant gene or genes. Apart from the presence of such underlying factors, it is probable that the muscular dystrophy can never arise.

Familial Periodic Paralysis.—Maclachlan reports six cases of familial periodic paralysis in three generations of one family and reviews the histories of families previously recorded as suffering from this disease. The condition tended to develop about the age of 17 to 18 years in each member of the family, and in some patients who have suffered from paralytic attacks for years there was a development of permanent muscular weakness and rarely the picture of one of the muscular dystrophies; the occurrence of muscular dystrophies in other members of the families, who were not themselves affected by periodic paralysis, is also described. The condition is compared with migraine, epilepsy and certain heredofamilial degenerative diseases. It is considered that two factors are concerned in causing the attacks of paralysis, namely, (1) an abnormal constitution of diathesis in which there exists, in patients with a neuropathic inheritance, a condition of disequilibrium of the vegetative nervous system with evidence of periodic intoxication associated with abeyance of the digestive function and abnormal metabolism at the time of the attacks, and (2) some abnormality in the muscles themselves. The author believes that the attacks of paralysis are caused by the low resistance of the defective muscle to abnormal metabolic products present during the periods of intoxication, while it is probable that interference with the blood and lymph circulation in the muscles, which results from the disturbance of the sympathetic system, is a contributory factor.

Tonic Pupils and Absent Tendon Reflexes.—Adie states that the tonic pupillary reaction, under a number of different names, has been known to ophthalmologists since 1902. In some of their cases absence of one or more of the tendon reflexes was noted, but this was misconstrued as further evidence that the ocular signs were due to syphilis. The author's conclusions are based on a study of nineteen cases presenting tonic pupils, thirteen of them with absent tendon reflexes, that have been reported, almost all, in journals of ophthalmology. The cases showing tonic pupils and absent reflexes are tabulated. The disorder manifests itself in complete and incomplete forms. The complete form is characterized by the presence of the tonic convergence reaction in pupils only apparently inactive to light and absence of one or more of the tendon reflexes. The term incomplete forms is used for cases presenting (1) tonic pupillary reactions alone; (2) atypical phases of the tonic pupil alone (usually mistaken for iridoplegia or internal ophthalmoplegia); (3) atypical pupils with absent tendon reflexes, and (4) absent tendon reflexes alone. The tonic pupillary reactions are described in detail and discussed in relation to the Argyll Robertson phenomenon, fixed pupils and internal ophthalmoplegia. The conclusion is reached that the tonic pupil is essentially different from them. The features that distinguish it from the Argyll Robertson pupil are emphasized. The incidence and distribution of tendon areflexia are given and the general features of the disorder are described. The age of onset cannot be determined; females preponderate largely; the cause is unknown. The disorder runs a benign course and rarely causes trouble. Occasionally, vision is affected by defective accommodation. Evidence is adduced to show that the disorder is unrelated to syphilis. Under differential diagnosis, syphilis, the ocular manifestations of diphtheria and epidemic encephalitis are mentioned only to show that they never produce the symptoms found in this disorder. Other conditions are referred to in which the tendon reflexes are lost temporarily or permanently in the absence of disease of the spinal cord or peripheral nerves. The conclusion is reached that the symptoms described are the manifestation of a disorder of the sympathetic nervous system. They are the expression of a kind of perversion of nervous activity of which at present one can form no conception.

British Journal of Dermatology and Syphilis, London

44: 173-232 (April) 1932

A Dermatosis Occurring Among East African Natives. A. M. Fleming and R. S. F. Hennessey.—p. 173.
*Significance of Erythema Nodosum. J. O. Symes.—p. 181.
Erythrodermia with Edema. F. P. Weber and E. Schwarz.—p. 187.
*Lymphopathia Venereum (Lymphogranulomatosis Inguinalis) and the Frei Test. J. Wolf and M. B. Sulzberger.—p. 192.
Simultaneous Alopecia Areata in Two Brothers. H. Goodman and H. S. Abel.—p. 198.

Significance of Erythema Nodosum.—Symes feels certain that persons who have been suffering from erythema nodosum are peculiarly liable to develop an acute and often fatal form of tuberculosis within six months of the illness, the most common forms being pleural effusion and acute general tuberculosis. In a series of cases of erythema nodosum which he reported three years ago, tuberculosis appeared within six months in 10 per cent: general tuberculosis developed in two, mononuclear pleural effusion in five, and tuberculous meningitis in one. A tuberculous pleural effusion developed in one other patient in this series, but this was five years after the attack. Since the reports of these cases were published, the author has seen thirteen cases of erythema nodosum; two of the patients, subsequent to the attack, have been found to be suffering from phthisis and have gone to sanatoriums for treatment. An attack of the acute specific fever, erythema nodosum as distinct from the allergic rashes of erythema multiforme or sepsis, calls for a prolonged period of treatment and after-care in order that the tragedy of a fatal attack of tuberculosis may not supervene. The author believes that the practitioner who neglects this precaution is as blameworthy as the man who is content in a case of syphilis to stop treatment as soon as the secondary rash has disappeared.

Lymphopathia Venereum.—According to Wolf and Sulzberger, lymphopathia venereum is not generally accepted as of venereal origin. Without careful examination, the primary lesion is often so insignificant that it passes unobserved. The penile lesion makes its appearance from ten to thirty days after infection and is followed by swelling of the inguinal lymphatics within a period ranging from two to three weeks. The onset is an insidious one, since the lymph nodes are indolent and, as a rule, cause little discomfort. With enlargement there is the tendency for these nodes to become conglomerate, and the overlying skin becomes markedly adherent, attenuated and of violaceous hue. As the disease progresses the lymph nodes soften; they begin to fluctuate, and eventually multiple fistulas appear which discharge a purulent yellowish fluid. Only about 50 per cent of the cases go on to this stage of fistulization. Not infrequently the iliac lymph nodes are involved and are then distinctly palpable, yet not tender. These nodes usually go on to resolution, and many of the inguinal ones likewise subside without treatment. In addition to the signs mentioned, which occur most frequently in males, esthiomène, or ulcus chronicum elephantiasticum vulvae, the condition known as "syphiloma" anorectale and a certain type of high rectal stricture, especially in women, have in many cases been proved to be part of this disease and are probably due to the same (unknown) etiologic factor. Any one of these manifestations, or a syndrome of two or more of them, can be present. Moreover, some cases of elephantiasis of the penis and scrotum are probably due to the same cause. In 1925, Frei introduced a specific intracutaneous test for lymphogranulomatosis inguinalis which has proved to be of distinct value in the diagnosis of conditions involving the inguinal lymph nodes and has been of great help in the classification of this group of diseases. Climatic bubo, strumous bubo, tropical bubo and nonvenereal bubo are all names that have been applied to conditions with this clinical picture, and many of these cases, with the aid of the Trei test, have been proved to be lymphogranulomatosis inguinalis. It is probable that, as the use of this test becomes more widespread, many of the foregoing names will gradually be eliminated from the nomenclature. The authors suggest the name "lymphopathia venereum." Besides the clinical condition described by Nicolas, Favre and Durand, this designation will then include those cases of esthiomène (ulcus vulvae chronicum elephantiasticum), of "syphiloma" anorectale, of elephantiasis of the penis and of rectal stricture, which, by means of the Frei test, have been proved to have the same etiology. All these conditions are due to disease and obstruction of the lymphatics following venereal infection and are probably due to the same etiologic factor or virus.

British Journal of Physical Medicine, London

7: 1-20 (April) 1932

*Nature and Treatment of Adiposalgia. H. Jansen.—p. 3.
Treatment of Constipation by Colonic Irrigation Plus Diathermy. Violet M. H. Rendall.—p. 5.
*Treatment of Nasal Infections by the Super-Kromayer Lamp. E. J. Deck.—p. 6.
Treatment of Obesity by Physical Methods. F. H. Humphris.—p. 7.
*Treatment of Traumatic Lumbago by Manipulation. F. Romer.—p. 10.
Spas and Spa Treatment in Europe. M. B. Ray.—p. 11.
Ultrasonic Sound and Piezo Quartz. B. D. H. Watters.—p. 14.

Nature and Treatment of Adiposalgia.—According to Jansen, "subcutaneous fatty infiltrations" is a term applied to cases in which, in certain parts of the body, there is a somewhat large amount of fatty tissue, very tender to touch and accompanied presumably with abnormal changes. The sites of choice are the legs, the medial surface of the knees, the hips, the abdomen around the umbilicus and along the curvatures, the shoulders (deltoid region), and the back of the neck. Here the tissue is more firm than normal and is unyielding to pressure of the fingers—not infrequently being described as "hard as a board." If one tries to lift up a fold of this tissue, either it will be impossible or—if it can be done at all—the fold is remarkably thick in comparison with the subcutaneous fatty tissue in other areas. On continued palpation, preferably in the form of massage with the skin well greased, one finds also changes in the structure of the tissue. These may be palpable as a large number of small, hard nodules varying in size from a grain of sand to a buckshot, packed more or less closely together. In some places the diffuse infiltration is the dominant form, in others the granular. The skin over the infiltrated areas may be tense and shiny, though as a rule it looks normal, but on rubbing or scratching it shows remarkably strong vasomotor reactions, redness and blebs. Fairly vigorous manipulation of the infiltrated tissue readily produces ecchymoses. The most important feature is the extreme tenderness to touch of the "infiltrated" area. Among the subjective phenomena are a certain unrest in the affected region, sometimes paresthesia, as formication, and frequently a sensation of cold or mere chilliness. When the fatty layer is very abundant, the skin is usually cool to touch.

Treatment of Nasal Infections.—Deck states that in the treatment of nasal infections by the super-Kromayer lamp the patient should be placed in a dental or similar adjustable chair. The head-rest should be one that can be tilted in any desired position. In the absence of such a chair, the patient may be placed in a semirecumbent position on a couch. The nose, if hypersensitive, must be sprayed with a 10 to 15 per cent solution of cocaine. A flat quartz applicator about 2 inches long, and rounded at the end, is next gently inserted into the nostril and pushed slowly up the nose as far as the patient can bear it, while the lamp is kept as nearly horizontal as possible. With a standard lamp, an application of from forty to sixty seconds is then given to each side of the nose. When this is done, the short quartz applicator should be replaced by one about 4 inches long, with flat sides and slightly curved at the end, so that it can be readily passed along the lower nasal passages. By gentle handling and accommodation to the curves of the lower nasal passages, this applicator can be easily passed almost into the nasopharynx. When this is accomplished, a similar exposure of from forty to sixty seconds may be given to each side. Treatment as a general rule should not be repeated for at least four days.

Treatment of Traumatic Lumbago by Manipulation.—Romer calls attention to the fact that the history in cases of traumatic lumbago tells of some definite though frequently slight sprain of the back, requiring perhaps only a few days' treatment for apparent recovery. Instead of perfect recovery, the pain, though rarely severe, never quite disappears, and as time goes on it becomes more persistent. Good results can be obtained by treatment based on the assumption that the condition is due to some adhesions in the muscular or tendinous structure of those parts. On examination the lumbar muscles will often be found wasted, while those on the affected side are usually rigid and contracted, and it may be assumed that it is here that some matting of muscles or adhesions among the deeper tendons exist. Normal mobility is frequently much impaired. Bending the trunk forward will often show that flexion in the region is deficient and not infrequently accompanied by pain. As a rule these cases are unilateral, and consequently lateral movements of the trunk are often impaired. In this condition, treatment aims at stretching the contracted muscles and rupturing any possible adhesions. An anesthetic having been given, the method employed is this: With the patient flat on the back, the leg on the sound side is flexed at the knee and the thigh flexed on the body till the knee touches the chest wall. It is then brought back to the extended position. The leg on the affected side is now put through the same movements, and comparison can be made as to the difference in resistance, which sometimes is most noticeable. Both legs are now brought up together, and both knees should be kept pressed against the chest for about a minute. The legs having been brought to the extended position once more, the patient is now raised to a sitting posture. The operator places one hand firmly on the affected side, while with the other he thrusts the patient back on to the couch; the hand in the middle of the back, acting as a fulcrum, causes extension; the trunk is then moved laterally on the pelvis. By these movements, full extension and flexion of the lumbar region is obtained. Pain rarely follows these manipulations, and greater freedom of movement is often experienced immediately afterward; but too much importance cannot be attached to the after-treatment. This consists in radiant heat and skilled massage performed daily for a period of about twenty minutes, commencing with light kneading, which can increase in depth as time goes on. Anything like roughness or deep pummeling is to be deprecated. Within the course of about four days, graduated exercises by means of weights and pulleys should be undertaken in addition to the massage.

British Journal of Tuberculosis, London

26: 57-106 (April) 1932

Koch's Discovery of Tubercle Bacillus. S. L. Cummins.—p. 72.
The Teaching of Tuberculosis. J. Crocket.—p. 76.

British Medical Journal, London

1: 643-692 (April 9) 1932

*Surgical Treatment of Diseases of Gallbladder and Bile Ducts. R. P. Rowlands.—p. 643.
*Duodenal Ulcer: Observations on Two Hundred and Fifty Cases, with Especial Reference to Types of Stomach and Corresponding Test Meal Observations. H. S. Morley.—p. 647.
Excretion Urography. R. T. Payne.—p. 649.
Fatal Case of Acute Necrosis of Liver Associated with Epidemic Catarrhal Jaundice. G. M. Findlay and J. L. Dunlop.—p. 652.
Silico-Antracosis Presenting Curious Bodies Similar to Those in Asbestosis. W. E. Cooke.—p. 656.
*Paroxysmal Tachycardia Associated with Pregnancy. D. F. Anderson.—p. 657.

Surgical Treatment of Diseases of Gallbladder.—Rowlands believes that as a good general rule it is wise not to operate during an acute attack of colic, jaundice or fever. It is safer to wait for a quiet interval, using the time to investigate and to prepare the patient carefully. Later, a more radical operation can be safely performed. Fortunately the acute symptoms usually subside under complete rest and careful medical treatment, for, unlike the appendix, the gallbladder and bile ducts rarely set up spreading peritonitis. It is true that occasionally the acute symptoms do not abate but get worse and demand emergency operations. Usually these should be limited to drainage of the gallbladder or common bile duct. Radical operations can, if necessary, be carried out later, when the patient is better, the liver functions are restored, and sepsis has subsided. It is a great mistake to let many recurrences take place or to allow time for dangerous complications to develop or the general health to become seriously depreciated. Too long watching and waiting and relying on drugs and dieting for the relief of symptoms inevitably leads to much suffering and a greatly increased mortality from delayed operation. Some of the consequences of delay are: (1) gangrene, suppuration and perforation of the gallbladder with local or even diffuse peritonitis, pylephlebitis, septicemia and multiple arthritis; (2) extension of the disease to the common bile duct with jaundice, infective or suppurative cholangeitis, with risks of hemorrhage and cholemia; (3) extension to the pancreas, causing either acute hemorrhage or chronic pancreatitis, with or without jaundice; (4) intestinal obstruction by gallstones ulcerating through into the duodenum or colon; (5) adenoma, papilloma and cancer from chronic irritation of the gallbladder and bile ducts; (6) cardiac degeneration from chronic septic absorption (the damaged heart is often restored by removal of a septic gallbladder), and (7) cerebral toxemia, from the same causes, which may induce mental confusion, depression and even insanity, which are sometimes overcome by removing the septic source of poisoning. Cholecystostomy affords complete and permanent relief of symptoms in only about 45 per cent of cases. The persistence or recurrence of symptoms is often due to stones left behind, to the persistence of inflammation in the walls of the gallbladder, or to the formation of new stones. Secondary cholecystectomy or choledochostomy is often required. Cholecystectomy affords complete and permanent relief in about 86 per cent of cases. The more accurate the diagnosis and the more complete the operation, the better the result. Some temporary recurrence of symptoms may follow cholecystectomy, owing, perhaps, to spasm of the sphincter of Oddi, with dilatation of, and inflammatory changes in, the bile ducts secondary to loss of the gallbladder. Under these conditions, spasmodic pains may develop and be attributed to stones left behind in the common bile duct. In the author's experience these symptoms are almost limited to late cases in which delay before removal of the gallbladder has already allowed infection to spread to the common bile duct. Cholangeitis may then persist or recur, perhaps with exacerbations, even after drainage of the common bile duct, as well as after the removal of the gallbladder. Medical treatment will generally cure these symptoms and should be well tried before one submits the patient to another operation, which may not discover any stone or obstruction in the bile ducts. Recurrence of symptoms after operation may be due to residual infection in the liver or pancreas, to stones overlooked in the ducts, to errors in diagnosis—such as overlooking ostearthritis of the spine—or to spastic or mucous colitis.

Duodenal Ulcer.—On the basis of an investigation of the records of 250 cases of probable duodenal ulceration, Morley draws the following deductions: 1. The sex incidence shows a preponderance of 5.2 males to 1 female. 2. One third of all patients first notice symptoms between the ages of 20 and 29; more than one half between 20 and 39 years of age. 3. The asthenic type of stomach is infrequently the seat of duodenal ulceration; but otherwise duodenal ulcers occur in the hyposthenic, sthenic and hypersthenic types in about the same proportions as these types occur in a hundred normal individuals. 4. The average test meal curve is higher in cases of duodenal ulceration than in normal individuals. 5. The curve of gastric acidity steadily increases from being lowest in the asthenic to a maximum in the hypersthenic type.

Paroxysmal Tachycardia in Pregnancy.—The noteworthy feature of a case of paroxysmal tachycardia observed by Anderson in a woman, aged 22, is that throughout the entire period of gestation not a single attack occurred. Apart from some sickness after meals, especially at night, she was perfectly well during pregnancy. The last menstrual period and the first after delivery were each associated with a paroxysm. An attack that appeared one week post partum, lasted over five and a half days, and the worst from which the patient had suffered, far surpassed in duration her previous record, which was thirty-six hours. One cannot fail to be impressed with the absence of tachycardia during the period of pregnancy, when many organs are overtaxed. One naturally wonders to what extent endocrine activity (known to be so pronounced in pregnancy) was concerned.

Glasgow Medical Journal

36: *169-224 (April) 1932*

Treatment of Pulmonary Tuberculosis by Collapse Therapy. J. M. Johnston.—p. 169.
Surgical Treatment of Pulmonary Tuberculosis. W. Anderson.—p. 195.

Journal of State Medicine, London

40: 187-258 (April) 1932

Recent Researches in Prevention of Maternal, Fetal and Neonatal Mortality: Lecture III. (*a*) Neonatal Period; (*b*) Puerperium and Puerperal Sepsis. Louise McIlroy.—p. 188.
Etiology of Rheumatism, with Especial Reference to Infective Causes. W. Willcox.—p. 197.
Rise of Conception of Rheumatism as Social Problem. R. F. Fox.—p. 209.
Prussic Acid Fumigation. H. Rosenhaupt —p. 226.
Compulsory Medical Examination of Factory Workers. H. L. Garson.—p. 231.
Constitutional Researches in Children and Conclusions About Goiter Prophylaxis. F. Boenheim and F. Heimann.—p. 236.

Lancet, London

1: 761-814 (April 9) 1932

*Rôle of Hemolytic Streptococci in Infective Disease. C. C. Okell.—p. 761.
*Gallbladder and Cardiac Pain. C. H. Miller.—p. 767.
Intravascular Occlusion of Mesenteric Vessels. F. d'Abreu.—p. 772.
Amblyopia: Effects of Kinetic Treatment. N. A. Stutterheim.—p. 774.
Tumors of Skin Produced by Blast-Furnace Tar. Georgiana M. Bonser.—p. 775.

Hemolytic Streptococci in Infective Disease.—Okell believes that a large number of hemolytic streptococci from the most diverse sources in human disease and also from apparently normal persons are essentially similar, having the same general morphologic and biochemical properties. Agglutination tests, while they show that serologic differences exist among members of the group, do not differentiate species within the group. There are three properties characterictic of the pathogenicity of the hemolytic streptococci and these must be considered separately. 1. An erythrogenic (or rash producing) toxin, immunologically identical whatever the source from which the strain is derived. To this a neutralizing serum is available, under the name of "scarlatinal antitoxin." 2. A pyogenic property, common to all hemolytic streptococci and perhaps closely related to streptococcal hemolysin. To this no antibody has so far been discovered. 3. An invasive property which may or may not be linked with the pyogenic property. To this also there is no general antibody available, though Lancefield's and Todd's work suggests that antibodies to any particular strain could be prepared. These three elements in the attack of the hemolytic streptococcus, pyogenicity, toxigenicity and invasiveness, vary in intensity from case to case. The strength of the host's defense against erythrotoxin and the side of the conflict also vary. These differences are sufficient to account for the variegated pathologic and clinical patterns of human streptococcal disease. If these views are accepted it must be admitted that the hemolytic streptococci ordinarily encountered in disease constitute a species both on grounds of formal taxonomy and of pathology. With regard to the nomenclature of the species, Rosenbach's term Streptococcus pyogenes has the unquestionable right of priority; hence it should replace Schottmüller's term Streptococcus hemolyticus, which at present seems to have the greater vogue. It would be quite unjustifiable to predict that other species of hemolytic streptococci will not be established in the course of time. For example, the position of the so-called Streptococcus epidemicus and certain hemolytic streptococci found in animals have not yet been clearly defined. The anaerobic hemolytic streptococci have also to be given their proper position. But in the light of present knowledge there is little doubt that it would save much confusion if bacteriologists would abstain from putting forward new species without good reason, and from what is almost worse—giving pseudospecific names to what they would never themselves claim were species in any strict biologic sense.

Gallbladder and Cardiac Pain.—Miller calls attention to the fact that clinically there may be considerable resemblance between the severe pain of the gallbladder and cardiac pain, and there may be overlapping of symptoms in severe attacks affecting either organ. Both types of pain can occur in the same subject and be recognizable as distinct. Disorders of both organs may be present in the same patient. Cases have been quoted in which surgical treatment of the gallbladder has been followed by relief from both types of pain. If there is any reason to suspect the gallbladder in any patient who has cardiac pain, a full investigation of the gallbladder should be made, and if sufficient evidence is found, operation should be advised. A study of morbid anatomy reveals the fact that in subjects with diseased gallbladder the degree of arterial degeneration was higher and the cases of severe arterial degeneration were more numerous than in those whose gallbladders were healthy. That being so, it would appear to be rational to deal thoroughly with cases of cholecystitis or gallstones as soon as diagnosed.

Medical Journal of Australia, Sydney

1: 391-424 (March 19) 1932

Remarks on Some Abdominal Problems, Based on Clinical Experience. H. I. Holmes.—p. 391.
Public Health Responsibilities of General Practitioner. G. E. Cole.—p. 395.
Some Aspects of Obstetric Radiography. C. MacDonald.—p. 398.
Use of Some Recently Introduced Drugs in Treatment of Diseases of Heart. M. C. Lidwill.—p. 406.

Practitioner, London

128: *369-464 (April) 1932*

British Health Resorts and Spas. H. Rolleston.—p. 369.
British Spas: Indications and Seasons. R. F. Fox.—p. 373.
Choice of Spa. M. B. Ray.—p. 382.
East Coast Health Resorts. F. W. Burton-Fanning.—p. 394.
Climate and Health Resorts of Southwest of England. A. E. Carver.—p. 403.
Health Resorts on South and Southeast Coast. L. Wainwright.—p. 416.
Thrombophlebitis Migrans vel Recurrens. F. P. Weber and E. Schwarz.—p. 421.
Practical Points on Modern Infant Feeding. B. Myers.—p. 425.
*Cardiac Arrythmias: Their Effect on Operative Risk. T. J. Hoskin.—p. 437.
Diagnosis of Mastoid Disease in General Practice. H. V. O'Shea.—p. 447.

Cardiac Arrhythmias.—Hoskin states that cardiac arrhythmia is not uncommonly found in cardiovascular syphilis; it may show itself in the form of ectopic beats, as auricular fibrillation, or as an impairment of the conductivity of the neuromuscular system. Thus, all forms of auriculoventricular block may be found as the result of syphilis. The author emphasizes the necessity of obtaining a full history and of having Wassermann and Kahn tests done in all cases in which the integrity of the cardiovascular system is open to doubt. Syphilis, unlike rheumatic fever, affects not only the heart muscle but also the proximal part of the aorta, with involvement of the orifices of the coronary arteries, resulting in a condition of anoxemia of the heart muscle. Patients with cardiovascular syphilis stand operations badly, and therefore a positive Wassermann reaction or signs of cardiovascular syphilis makes the operative risk much greater, and it is thus of the utmost importance that the surgeon and anesthetist should be cognizant of it prior to the operation.

South African Medical Assn. Journal, Cape Town

6: 177-212 (March 26) 1932

Symposium on Hysterical Phenomena: Psychiatric Aspect. W. Russell. —p. 179.
Id.: Medical Aspect of Hysteria. J. Drummond.—p. 181.
Id.. Hysterical Phenomena in Women. D. J. Malan.—p. 185.
Id : Surgical Aspects of Hysteria. T. L. Sandes.—p. 187.
Impressions and Suggestions. G. E. Nesbitt.—p. 190.

Chinese Medical Journal, Shanghai

46: 243-346 (March) 1932

*Brucella Infection in Chinese (Undulant Fever). S. H. Zia and D. H. Wong.—p. 243.
*Study of Gastric Secretion in Various Forms of Vitamin A Deficiency. A. Pillat and H. C. Chang.—p. 254.
Trigeminal Neuralgia: I. Diagnosis and Treatment. S. T. Kwan.—p. 260.
Vital Statistics of Families of Chinese Physicians. W. G. Lennox.—p. 277.
*Renal Tuberculosis: Statistical Study of Fifty-Six New Cases. H E. Shih and G. Y. Char.—p. 285.
Preliminary Study of Postpubertal Phthisis in Chengtu. H. G. Anderson. —p. 305.
Hysterical Chorea and Catalepsy Following Trauma. S. D. Sturton. —p. 313.
Report of Case of Complete Transposition of Thoracic and Abdominal Viscera. T. D. Fay.—p. 318.
Root Amputation Versus Tooth Extraction. A. W. Lindsay.—p. 320.
Occlusion. H. J. Mullett.—p 325.

Brucella Infection in Chinese.—Zia and Wong report two cases of undulant fever of natural infection and one of probable laboratory infection. They were all proved by positive agglutination and blood culture. An attempt to differentiate the organisms obtained into the subgroups of Brucella was made and the common differential tests are briefly described. Incidence, symptomatology, diagnosis and treatment of this disease are briefly discussed. Attention is called to the present lack of definite knowledge in the spread of this disease in North China, where dairy products probably do not play an important part.

Gastric Secretion in Vitamin A Deficiency.—Pillat and Chang studied the gastric function by the histamine method in twenty-five cases of vitamin A deficiency. A definite depression of the acidity was found in ten cases. Four patients had anacidity. The degree of impairment of the gastric function seemed to be related to the duration and severity of the eye disease. After the administration of cod liver oil and improvement of the eye lesion, in seven out of the eight cases reexamined the patients showed an improvement in the gastric secretory function.

Renal Tuberculosis.—The results of a survey of fifty-six new proved cases of renal tuberculosis seen during the past ten years are summarized by Shih and Char as follows: Renal tuberculosis was seen in the male almost three times as often as in the female. It occurred most frequently in the second, third and fourth decades of life. It affected people of all professions, most commonly students, merchants, housewives and soldiers. The two kidneys were affected with equal frequency. Evidence of tuberculosis in other parts of the body was found in 35 per cent of the cases. The general health of the patients was good in 50 per cent of the cases. Sixty per cent of the cases were seen within the first year of symptoms. The symptoms in the order of their frequency were hematuria, frequency of urination, painful urination, pyuria, and renal and vesical pain. The urine was acid in 75 per cent of all the cases and contained albumin in 88 per cent. Tubercle bacilli were demonstrated microscopically in 27 per cent, in catheterized specimens from separate ureters in 36 per cent and by guinea-pig inoculation only in 9 per cent — a total of 72 per cent. The advantages of cystoscopy, ureteral catheterization, roentgen examination and pyelo-ureterography are discussed. The authors believe that renal tuberculosis is never cured by general medical and hygienic measures alone. Nephrectomy, wherever possible, is the treatment of choice. Fifty-five per cent of the cases were operable. There was no immediate operative mortality in this series. Fifty-five per cent of the patients in whom nephrectomy was performed are greatly improved or well.

Presse Médicale, Paris

40: 625-640 (April 23) 1932

Lipin Precipitation of Specific Cations and Determination of Protective and Zymosthenic Power of Mineral Waters. M. Loeper, A. Mougeot and V. Aubertot.—p. 625.
*Resection of Cellular Tissue in Treatment of Paronychias. J. de Rougemont and F. Carcassonne.—p. 627.
Gastric Secretion in Urticaria. C. Rahier.—p. 629.

Resection of Cellular Tissue in Treatment of Paronychias.—Rougemont and Carcassonne state that, in a large number of cases of infection of the fingers, simple incision is not enough to assure cure, because there is not an actual collection of pus but a necrosis of cellular tissue, elimination of which is slow. A large resection extended into the healthy tissue in rapidly removing the contaminated zone has incomparable advantages over incision: it hastens cicatrization in all cases, it avoids the silent spread of infection, which often persists after the usual treatment; finally, although extensive, it permits preservation of the finger with satisfactory function in cases in which its vitality was endangered. In reviewing the pathogenesis of panaris the author calls attention not only to the extensive tissue necrosis but also to the severe inflammatory reaction which accompanies it and which in the finger, owing to its construction, can lead to great detachment and extensive gangrene of the skin and consequent amputation. By simple incision with a bistoury one may sometimes cure a beginning cellulitis, but more often the lesions are too serious and following incision the cellular tissue ruptures, drainage is impeded or lacking, tumefaction is increased, and there persists for weeks a state of semiinfection, which leaves the affected area much altered. The thin cicatricial tissue that replaces the necrosed skin adheres to the decalcified bone without interposition of cellular tissue. Excision of the entire zone of infection at the start avoids its extension and also reduces the severity and intensity of the inflammatory reaction and its dangers. The authors think a large excision with scissors which, while sparing the nerves, vessels and sheaths, removes the diseased tissue and extends just into the healthy tissue constitutes an efficacious therapeutic measure.

Revue Française de Dermat. et de Vénéreol., Paris

8: 131-192 (March) 1932

*Treatment of Primary Syphilis by Inoculation with Spirochetes of Rat-Bite Fever. Hashimoto and I. Iwakiri.—p. 131.
Photobiotropism. H. Jausion, F. Pagès and A. Soleil.—p. 145.
Tabetic Pruritus and Erythrodermia. G. Milian.—p. 160.

Treatment of Primary Syphilis by Inoculation with Spirochetes of Rat-Bite Fever.—Hashimoto and Iwakiri report the results of treatment in thirteen cases of primary syphilis by inoculation with the spirochetes of rat-bite fever (Spirochaeta morsus-muris). While they admit that their material is insufficient for a definite judgment of this therapy, they conclude that primary syphilis may be completely cured by inoculation of rat-bite fever, without other treatment. The patients were inoculated intramuscularly with spirochetes obtained from the blood of guinea-pigs that had been inoculated with cultures of the organism. The rat-bite fever, which develops after an incubation of from six to sixteen days, may be intermittent or continuous. The rat-bite fever was cured by injection of arsphenamine after the second or third attack of fever. The quantity used was as small as possible (from 0.3 to 0.4 Gm. every three to five days, to a total of from 0.6 to 1.5 Gm.) to avoid influencing the syphilitic treatment. Inoculation of the rat-bite virus resulted in the disappearance of Spirochaeta pallida from the chancre in the first days of fever even in cases in which a great many spirochetes had been observed previously. In one case the spirochetes disappeared from the chancre before the fever attack. Serum reactions (Wassermann, Meinicke and Murata) were practiced before and after inoculation, after each fever attack, and after each injection of arsphenamine. The serum became negative and remained negative in six of the nine cases observed sufficiently long. In two of the others there was a decided decrease in the strength of the reaction. In the control case, in which an injection of arsphenamine was not given, the serum reaction became quite strong from time to time but became completely negative after one year. In discussing the disappearance of Spirochaeta pallida from the chancre, the authors advance the idea that this may be due to the reproduction of Spirochaeta morsus-muris, which is antagonistic to Spirochaeta pallida, instead of being due to the fever caused by the rat-bite virus.

Semana Médica, Buenos Aires

39: 757-840 (March 10) 1932. Partial Index

Symphysiotomy in Spontaneous Labor for Disproportion Between Pelvic and Cephalic Diameters. A. Peralta Ramos and J. Bazán.—p. 757.
Congenital Perineal Ectopy of Testis. J. M. Jorge and S. I. Nudelman.—p. 761.
Treatment of Tuberculous Asthma with Tuberculin. J. J. Vitón and J. A. Cruciani.—p. 765.
*Generalized Thoracic Pulsation. T. Padilla, P. Cossio and E. B. del Castillo.—p. 769.
Indications for Symphysiotomy for Delivery. R. Schwarcz.—p. 778.
Visceralgia; Lemaire's Sign. R. C. Ferrari.—p. 784.
Influence of Atropine on Sugar Metabolism. A. Casanegra.—p. 803.
Subcutaneous Milk Therapy in Nervous Agitation. R. B. Silva and H. M., Piñero.—p. 809.
Heterotopic Ossification of Tumor of Thyroid. W. Tejerina Fotheringham.—p. 812.

Generalized Thoracic Pulsation.—Padilla and his collaborators consider the diagnostic value of a sign (previously described by Arrillaga and Dabove) as pathognomonic for aneurysm of the retrocardiac portion of the descending aorta (even in cases in which the small size of the aneurysm or its location behind the heart make it difficult to diagnose by roentgen examination). The sign consists in a generalized pulsation of the entire anterior aspect of the thorax, which is synchronous with the ventricular systole and during which the two halves of the thorax present an opposed pulsation; that is, an elevation of the left half of the thoracic anterior wall with a simultaneous depression of the right half. However, the authors found the sign in three cases with some pathologic conditions of the heart (cardiac hypertrophy and tumors behind the heart), while it was absent in a case of aneurysm of the retrocardiac portion of the descending aorta. From their observations in the cases mentioned, the authors conclude that the sign of generalized thoracic pulsation may appear in aneurysm of the retrocardiac portion of the descending aorta, in tumors located behind the heart, and in hypertrophy of the heart. The generalized thoracic pulsation is caused by the systolic dextrotorsion of the heart when this organ is imprisoned between the anterior thoracic wall anteriorly and the vertebral column posteriorly, owing either to its increased volume or to the space being occupied by aneurysm or tumor. The pulsation is caused by a thrust of the heart against the thoracic wall, which causes the elevation of the left half of the thorax with a generalized pulsation. When the precordial systolic elevation is followed by a second diastolic elevation caused by an impulse of the heart by the dilatation of the aneurysm, there is a double pushing of the heart against the thoracic wall (the first projection of the heart being caused by the apex beat while the second represents a renewed impulse given to the heart by the expansion of the aneurysm during the diastole), a sign which Hope described in 1830 under the name of "double jogging impulse."

Siglo Médico, Madrid

89: 405-428 (April 16) 1932. Partial Index

*Injection Treatment of Inguinal Hernia. J. Marín Espinosa.—p. 405.
Gonorrheal Arthritis: Present Status. J. M. Tome Bona.—p. 409.
Surgical Treatment of Tumors of Spinal Cord. L. Dominici.—p. 411.

Injection Treatment of Inguinal Hernia.—Marín Espinosa obtained good results in 500 cases of inguinal hernia in adults from 40 to 80 years of age, with a treatment of about eight to ten injections, at weekly intervals, of from 0.5 to 2 cc. each of a solution made up according to the following formula: 80 Gm. of absolute alcohol, ten drops of solution of orthophosphoric acid, and as much distilled water as required to make 100 cc. In some exceptional cases he injected a larger dose (from 4 to 10 cc.). From his observations the author reaches the following conclusions: The treatment with stimulating injections is efficient when inguinal hernia may be easily reduced and the reduction maintained by a truss, regardless of the size of the hernial sac, its duration, its primary or recurrent development, and the age and general condition of the patient. The treatment is harmless and does not interfere with the working activities of the patient, since it is of an ambulatory type; no complications are observed during its administration and it is followed by complete recovery in 85 per cent of the cases. It is advisable to have children with inguinal hernia use a truss, with the use of which, as a rule, complete cure is obtained at that age. Young persons as well as more mature persons in good health should be operated on. The injection treatment should be reserved for the aged or for mature adult patients with some other coexistent diseases or poor general health. The author warns physicians to whom the technic of the stimulating injections for inguinal hernia is unknown against the use of commercial preparations which they received from abroad or from some other cities with instructions by correspondence to give the injections. The method, which in the hands of surgeons is safe, may be dangerous if given by physicians who are not familiar with its technic.

Klinische Wochenschrift, Berlin

11: 617-664 (April 9) 1932

Postoperation Syndrome. H. Eppinger.—p. 618.
*Early Diagnosis of Cirrhoses of Liver. P. Morawitz and R. Mancke.—p. 623.
Renal Glycosuria. L. Lichtwitz.—p. 626.
*Antianemic Substance in Blood Activated by Ultraviolet Irradiation. R. Seyderhelm.—p. 628.
Measurement of Volume of Pneumothorax. P. Martini and A. Heymer.—p. 631.
Bromine Content of Blood in Manic-Depressive Psychosis. H. Zondek and A. Bier.—p. 633.
Cholesteremia in Cirrhosis of Liver and Hepatocellular Icterus. F. Stroebe.—p. 636.
Relation of Basal Metabolism to Analysis of Total Daily Energy Economy. H. Bernhardt.—p. 639.
Relation of Insulin Sensitivity to Sinus Caroticus. J. Casas and K. Hinsberg.—p. 641.
Influence of Pregnancy, Parturition and Puerperium on Alveolar Carbon Dioxide Tension. P. Goldschmidt-Fürstner.—p. 642.
Total Carbohydrate Content of Cardiac Muscle: Theory and Results of Collapse Therapy in Pulmonary Tuberculosis. H. Ulrici.—p. 643.
Exactness in Execution, Evaluation and Presentation of Medical Investigations. H. von Wasilkowska-Krukowska and W. von Krukowski.—p. 646.

Early Diagnosis of Cirrhoses of Liver.—In a general consideration of the problem of early diagnosis of cirrhoses of the liver based on their own clinical experience, Morawitz and Mancke state that testing of various partial functions of the liver by tolerance tests is a valuable diagnostic measure, often permitting a certain diagnosis when other methods have failed. Spontaneous metabolic disturbances are not to be expected in the initial injuries of the parenchyma; therefore tolerance tests have to be used. The tests chosen by the authors were the combined insulin-dextrose-water tolerance test according to Althausen and the gelatin-water tolerance test of Mancke. In experiments conducted in eleven cases of early cirrhosis the insulin-dextrose-water tolerance test was positive in every case. The mechanism of this test is not yet fully understood. In view of the close functional relation of the liver with other organs it cannot be regarded as specific for the liver, but it seems to reveal incipient cirrhoses with the most certainty and may be used for examination in diseases of the liver. The gelatin tolerance test was positive in only seven of ten cases, but in the experience of the authors it has been positive solely in injuries of the liver. Another of the newer methods which the authors consider valuable in early diagnosis of cirrhosis is roentgenologic examination of the esophagus. They cite several cases in which discovery of varices in the esophagus by roentgenologic examination led to diagnosis of cirrhosis of the liver which was confirmed by further examination. While recommending these new methods of diagnosis the authors warn against neglecting the older measures, such as determination of urobilin in the urine, bilirubin in the blood, laparoscopy (in some cases), exact anamnesis and general clinical examination. The value of early diagnosis of cirrhosis of the liver from the standpoint of prophylaxis, therapy and prognosis is emphasized.

Antianemic Substance in Blood Activated by Ultraviolet Irradiation.—Seyderhelm states that the blood of human beings and other mammals contains an antianemic substance associated with the stroma of the erythrocytes which can be activated by ultraviolet irradiation. This statement is based on a series of experiments on dogs to determine the effect of direct ultraviolet irradiation of the circulating blood on the healthy and the diseased organism. The experiments show that saponin-induced anemia in dogs is prevented by ultraviolet irradiation of the circulating blood. The transfer.

of blood that has undergone ultraviolet irradiation—whether this was accomplished in vivo or in vitro—counteracts experimental saponin-induced anemia. The blood values achieved usually exceed the initial preanemia values, in spite of the continued infusion of saponin. This antianemic effect is not based on a detoxication of the infused saponin but is the result of a pouring out of young erythrocytes from the bone marrow into the blood stream in great abundance and to a degree not previously observed. This outpouring of erythrocytes usually leads to an overcompensation. The antianemic substance is associated with the stroma of the erythrocytes and can be derived from it in a protein free water clear solution. The author has named the active substance "cytagenin." A small percentage of this substance exists in active form in the blood of normal animals and human beings, but it exists chiefly in the inactive preliminary form. Ultraviolet irradiation in vitro produces a strong increase in activated cytagenin. Clinical investigations showed that injection of cytagenin is followed by an increase of reticulocytes in the peripheral blood in human beings and other mammals. A larger dose of this substance was required to bring about a reticulocyte response in cases of carcinoma, chronic septic conditions, advanced tuberculosis and pernicious anemia. Among these, regeneration was accomplished most rapidly in hypochromic anemias due to carcinoma and pulmonary tuberculosis and was accompanied by a general subjective improvement, shown in weight increase, reduction of increased sedimentation speed of erythrocytes and drop in temperature. Injection of cytagenin in cases of pernicious anemia brought a reticulocyte response but not the change effected by liver therapy. The author thinks it will require more investigation to determine the exact clinical significance of cytagenin and to determine whether it has an antitoxic as well as antianemic effect.

Münchener medizinische Wochenschrift, Munich

79: 577-620 (April 8) 1932

Bowlegs: Various Types and Treatment. F. Lange.—p. 577.
*Disturbances in Cardiac Rhythm with Severe Peripheral Circulatory Disturbances and Their Treatment. G. Wiele.—p. 581.
*Positive Seroreaction for Syphilis Following Injection of Diphtheria Serum. C. Stern.—p. 583.
Asthma, Bronchitis and Cold in Relation to Seasons. W. Storm van Leeuwen and C. de Lind van Wijngaarden.—p. 583.
Psychodiagnostic and Psychotherapeutic Experiences in Clinic for Internal Diseases. E. Wittkower.—p 586
Simple Method for Rapid Determination of Sugar Content of Urine. F. Rosenberg and H. Rauch —p. 589.
Simple Screening Against Alternating Current in Electrocardiography. H. Zimmermann.—p. 590.
Spleen Soup for Pale Children. H. von Baeyer.—p. 590.
Treatment of Pulmonary Gangrene. M. Lebsche.—p. 593.
Roentgen Diagnosis of Intestinal Occlusion. H. Durst and S. Utzschneider.—p. 597.
Bone Bridge Between Anterior Portion of First and Second Rib Simulating Early Infiltrate. Juttner.—p. 600.
Oral Cholecystography. B. Thom.—p. 600.
Pathogenesis of Multiple Sclerosis and Suggestion for Treatment. J. Hallervorden.—p. 602.

Disturbances in Cardiac Rhythm with Peripheral Circulatory Disturbances.—Wiele relates the clinical histories of two patients with paroxysmal tachycardia in whom the peripheral circulation was temporarily considerably impaired. The extremities, particularly the legs, were cold and hypesthetic, and gradually a bluish-black discoloration developed. The attacks of tachycardia were counteracted by intramuscular and eventually also by intravenous injection of a quinine preparation, and after the tachycardia had been checked the peripheral circulation likewise became normalized. The attacks recurred, but under the influence of quinine medication they became less frequent. The author advises that in disturbances of the cardiac rhythm the peripheral circulation should be watched, especially during perpetual arrhythmia, which is frequently observed in older people. During this irregularity of the pulse that develops on the basis of an auricular fibrillation, attacks of severe tachycardia often occur, and in these patients there are likewise disturbances in the peripheral circulation. The patients complain of unpleasant sensations in the extremities. The feet are cold and appear livid. If such disorders can be traced to a cardiac impairment they can be therapeutically influenced but, if they are due to vascular impairment, treatment is generally of little effect. Accordingly the author advises that one watch for disturbances in the cardiac rhythm, whenever disorders exist in the peripheral circulation. For the treatment of perpetual arrhythmia, the author recommends digitalis rather than quinine preparations.

Positive Seroreaction for Syphilis Following Injection of Diphtheria Serum.—Stern directs attention to several reports on positive syphilis reactions after injection of diphtheria serum, which have appeared since 1929. On the basis of these reports the possibility of a positive syphilis reaction after serum treatment cannot be doubted, but the author advises precaution in the interpretation of such observations. As early as 1920 he had pointed out that certain cases have to be differentiated from syphilis, which apparently are likewise caused by spirochetes, such as by oral spirochetes or by the spirochetes of balanitis, but not by Spirochaeta pallida. He observed cases with diphtheria-like symptoms, such as fever and painful throat, which had been diagnosed as diphtheria but in which bacteriologic examination proved this diagnosis incorrect. These cases, in which serum treatment had not been resorted to, often gave a positive syphilis reaction, which disappeared again spontaneously. Positive syphilis reactions were also observed following Vincent's angina. The author warns against the overevaluation of serologic tests, because positive syphilis reactions may be observed after throat infections, whether diphtheria serum has been administered or not. As a rule these positive reactions disappear spontaneously; however, he thinks it possible that they may persist for longer periods if infectious foci remain in the tonsils.

Wiener klinische Wochenschrift, Vienna

45: 449-480 (April 8) 1932

Goethe and Darwin as Naturalists. A. Fraenkel.—p. 449.
*Neoplastic Arthroses. K. Weiss.—p. 454.
Pathogenesis and Surgical Treatment of Epilepsy: Influence of Reflexogenic Sinocarotic and Cardio-Aortic Zones. D. Danielopolu and J. Marcu.—p. 457.
*Sugar Test Breakfasts. L. Lövi.—p. 460.
Treatment of Leukorrhea. C. Bucura.—p. 463.
Significance of Renal Insufficiency in Surgery. V. Blum.—p. 468.
Bilateral Pneumothorax. A. B. Frisch.—p. 470.

Neoplastic Arthroses.—The articular changes designated by Weiss as neoplastic arthroses are a special group of articular disorders with a characteristic symptomatology. They have nothing in common with arthritis deformans, with which some forms of neoplastic arthroses are classified. In the primary stage they are not inflammatory and their typical symptom is a new formation of tissues, which originates in some essential position of the joint, especially in the synovial membrane. The basis of their development is an organ-specific predisposition for neoplasms, but the immediate causes are articular injuries or diseases of various types.

Sugar Test Breakfasts.—In examining the gastric secretion following caffeine and alcohol test drinks, Lövi observed that alcohol exerts a considerable stimulation on the gastric mucous membrane and therefore is not suitable for the determination of the secretory function of the stomach. Caffeine, on the other hand, is a more physiologic stimulant. A recent report on the favorable influence of sugar in gastric and duodenal ulcers induced the author to investigate to what extent the orally administered concentrated sugar solution influences the chemical composition of the gastric juice. In order to compare the acid values, he made tests with caffeine and with sugar solution. On the first day the patients were given 200 cc. of water with 0.2 Gm. of caffeine, on the second day 200 cc. of water with 50 Gm. of sugar. These parallel experiments were made on thirty-seven patients, the majority of whom had gastric or duodenal ulcers or other gastric disorders, and some of whom had hepatic or biliary disorders. The acid values observed following the sugar test breakfast were considerably lower than those observed after the caffeine test. The lower values are due to the hyperinsulinemia produced by the sugar, and not to a dilution, nor to a lesser stimulating effect of the sugar. The fluctuations in the blood sugar curves that were observed are due to individual differences in the functional capacity of the islands of Langerhans. Histamine tests revealed that histamine does not increase the gastric acidity after the caffeine test drink, but it does increase the acidity after the sugar test. This is probably due to the fact that the histamine paralyzes the insulin action produced by the sugar and that thus the acid secretion is no longer inhibited. The author employed sugar treatment successfully in nine cases. Intravenously administered sugar he found ineffective.

Zeitschrift für klinische Medizin, Berlin

120: 1-248 (April 5) 1932

Insensible Perspiration and Specific Dynamic Action of Protein. J. Dieckhoff.—p. 1.

*Clinical and Experimental Investigations on Significance of Iron Contained in Food. F. Reimann and F. Fritsch.—p. 16.

*Disturbances in Conduction System of Heart During Diphtheria. W. Grunke.—p. 40.

Bilirubin Tolerance Test in Liver Disturbances. F. Stroebe.—p. 95.

Importance of Continuous Determination of Size of Liver in Patients Without Disturbances of Liver. E. Kobrak.—p. 112.

Behavior of Uric Acid Elimination in Urine Following Administration of Histidine. Margot Zeyen.—p. 128.

Clinical Aspects of Lipoid Nephrosis. A. Staubli.—p. 141.

Salyrgan Diuresis. M. Nothmann.—p. 158.

Behavior of Urinary Colloids and Its Value in Differential Diagnosis of Renal Diseases. H. Kahler, H. Kreuzig and F. Scheitz.—p. 171.

Quantitative Relation Between Blood in Urine and Erythrocytes in Sediment. Erna Cohn and E. Mislowitzer.—p. 193.

Diagnosis of Renal Infarct. F. Weiss.—p. 199.

Hematologic Observations on Persons in Spitzbergen: Aspects of Polar Anemia. O. Abs.—p. 213.

Blood Catalysis and Volume of Erythrocytes. I. Hallay.—p. 230.

Continuous Action of Sinocarotic Neurectomy on Cardiac Rhythm and on Blood Pressure in Human Beings. D. Danielopolu and A. Aslan.—p. 237.

Influence of Carbon Dioxide Baths on Chemical Dynamics of Muscular Work in Patients with Heart Disease. I. M. Sribner and R. N. Frenkel.—p. 240.

Significance of Iron Contained in Food.—Reimann and Fritsch state that formerly medicinal iron was differentiated from nutritional iron. It was assumed that medicinal iron was necessary for the cure of anemic conditions, whereas the iron in the food maintained a normal hemoglobin content only in healthy persons. However, the authors show that a large intake of foods that are rich in iron can effect an improvement in the blood status of iron-susceptible anemias for a considerable length of time. They observed no essential difference between the action of the iron contained in the food and that of a medicinal iron preparation. The iron contained in the food undergoes great changes during its passage through the gastro-intestinal canal. It is split off, transformed into ferrous iron, dissolved and resorbed. Thus the iron contained in the food exerts its therapeutic action by an indirect route; namely, by way of the effective ferrous iron. The splitting off, transformation and solution of the nutritional iron takes place mainly in the stomach, by the combined action of hydrochloric acid and the ferments, but to a lesser degree it takes place also in the intestine. However, the stomach and the intestine change only a part of the food iron into soluble ferrous iron; the other portion of the iron leaves the gastro-intestinal tract unchanged. For this reason the food iron exerts a lesser influence than the same quantity of ferrous iron. The utilization of the food iron is governed by laws similar to those that govern reduced iron or other iron preparations. The common denominator, by which the iron becomes effective, is the ferrous iron that is formed in the gastro-intestinal tract. The normal food provides only a limited amount of iron, which, although sufficient to maintain a normal hemoglobin content in healthy persons, is not adequate to effect a cure of anemia, especially when, as in gastric achylia, the conditions for resorption are unfavorable.

Disturbances in Conduction System of Heart During Diphtheria.—On the basis of reports in the literature, Grunke discusses disturbances in the cardiac conduction system developing during diphtheria, and the histologic changes in the cardiac muscle, which have been observed during these conduction disturbances. He then reports twenty-three cases of diphtheria, with severe electrocardiographic changes, and the results of histologic examinations on serial sections from the atrioventricular bundle and from other portions of the heart. Of the twenty-three patients, twenty-one died within the first eight days after development of the electrocardiographic changes. The histologic examinations of the conduction system and of the cardiac muscle revealed in the cases with electrocardiographic disturbances changes of a degenerative or of an exudative proliferative nature. In comparison with these cases, those without electrocardiographic disturbances showed only slight histologic changes, so that it is justified to ascribe the development of the pathologic electrocardiogram to those changes. The type of the histologic changes apparently has no influence on the type of the electrocardiographic disturbances, for the same electrocardiograms were noted in degenerative and in infiltrative processes. A relationship between the pathologic form of the electrocardiogram and the localization of the disease process in the cardiac muscle could not be definitely established. On the basis of his observations the author concludes that, in approximately half of the diphtheria cases that had a fatal outcome, death was caused by the cardiac injury. In regard to the treatment, he states that serum is effective only if it is administered during the first twenty-four hours following the development of the diphtheria. He further states that there was no conclusive proof for a favorable influence of the commonly employed cardiac drugs. Epinephrine proved the most effective.

Zeitschrift für Krebsforschung, Berlin

36: 1-144 (April 12) 1932

*Biologic Treatment of Malignant Tumors. G. Fichera.—p. 1.

*Cancer Problem as Hormone Problem. St. Konsuloff and K. Dimitracoff.—p. 37.

Heterotransplantation of Lymphosarcoma of Mice. C. Krebs and M. Thrane.—p. 49.

Cultivation of Lymphosarcoma in Vitro. C. Krebs and B. Faber.—p. 59.

*Pathogenesis of Primary Pulmonary Cancer. P. W. Ssipowsky.—p. 67.

Method to Free Inoculation Tumors from Spirilla. H. Aris.—p. 78.

*Combination of Cancer and Pulmonary Tuberculosis. S. Derischanoff.—p. 82.

Vital Storage and Tumor Development. G. A. Kreuzwendedich von dem Borne and R. E. J. ten Seldam.—p. 93.

Isamine Blue Therapy in Animal Experiment. G. A. Kreuzwendedich von dem Borne and R. E. J. ten Seldam.—p. 97.

Experimental Carcinoma of Gallbladder. I. I. Genkin and J. D. Dmitruk.—p. 104.

Diagnostic Investigations with a Diastase Activating Substance of Urine in Cancer and in Other Diseases. P. Geréb.—p. 115.

Water Content of Tissues of Normal Rats and of Those with Cancer. H. Schlottmann and W. Rubenow.—p. 120.

Experimental Production of Rat Sarcoma by Tomato Juice. W. A. Collier and R. Jaffé.—p. 126.

Biologic Treatment of Malignant Tumors.—Fichera discusses the latest results of his studies on the cancer problem, which he and his students have carried on for the last twenty years. His investigations were based on the theory that tumor formation is due to a disintegration of oncolytic substances or to an excess of substances stimulating cell growth or is the result of both these factors. After mentioning various observations that corroborate this theory of pathogenesis, he reports therapeutic experiments. In the summary he emphasizes that in children and in young persons the oncolytic capacity is much greater than in older persons and in cancer patients. Tests on the organs of calves revealed that the oncolytic capacity is greatest in the thymus and in the spleen and that it is lesser in the liver and least in the muscles and testes. Injection of extracts from the spleen and from the thymus into young persons and into old persons with cancer, with cardiac disorders or with arteriosclerosis revealed that these extracts increase the oncolytic power. The increase thus produced is more rapid and more lasting in young persons than in old persons. Injection of extracts from other organs increased the oncolytic index little or not at all.

Cancer Problem as Hormone Problem.—Konsuloff and Dimitracoff cite evidence that in animals a hormonal mechanism regulates the division and oxidation processes and the respiration of the cells. A disharmony in this hormonal regulation, which in older persons is more likely to occur, is the basis of the cancerization of the cells. Once this disharmony has set in, the tumor formation may begin if there is an inciting factor, that is, a sufficiently strong and persisting irritation. However, without the hormonal disharmony such irritation would not have that effect. The deviation of the cells begins with a modification that at first is reversible; but, if mutation once sets in, reversion to normal cells becomes impossible. Cultivation in vitro will reveal whether mutation has already taken place. As an example of prolonged modification that eventually may lead to mutation into a malignant growth, the authors mention gastric ulcer. They reason that if a hormonal disturbance is the common cause of the various stages of this condition, the same hormone that influences a gastric ulcer should also influence cancer. Accordingly, they tried to influence inoculated mice tumors by means of an insulin-free pancreas hormone that had produced favorable results in gastric ulcer. By intraperitoneal injection, the growth of tumors could be considerably inhibited. It is probable that this preparation contains some of the components of the hypothetic hormones that regulate the cell functions. The authors think that further investigations on this problem may open a way for combating cancer.

Pathogenesis of Primary Pulmonary Cancer.—Ssipowsky discusses the development of pulmonary cancer on the basis of two case reports. In the first instance the cancer developed after a chronic abscess. This case is of particular interest because it is the only one of this kind that has been reported. The author thinks that the pulmonary cancer developed under the influence of a chronic inflammation. That a chronic inflammation can really lead to tumor formation is shown in a second case, in which pulmonary cancer concurred with pulmonary tuberculosis. A chronic pleurisy and an indurative process led to proliferation of the epithelial elements of the bronchi in the region of the upper lobe of the right lung, because here a considerable connective tissue formation had created favorable conditions for this. Simultaneously, or perhaps somewhat earlier, a proliferation developed also in the wall. The chronic inflammation in the surroundings of the cavern and the exacerbation of the tuberculous process caused a still more intense development and thus a neoplasm formed. On the basis of only two case reports, the author does not feel justified to draw final conclusions about the significance of chronic inflammations in the development of primary pulmonary cancers.

Combination of Cancer and Pulmonary Tuberculosis.—According to Derischanoff, a combination of cancer and pulmonary tuberculosis is comparatively frequent. The two diseases do not counteract each other, but when cancer and tuberculosis exist in the same lung it is usually difficult to find tuberculous changes in the bronchi because the tumor tissues separate the tuberculous process from the bronchi so that bacilli do not enter the lumen. Old fibrous tuberculosis, as a chronic irritant, promotes cancer formation. The cancer in turn reduces the resistance of the organism and thus activates the tuberculosis. In the majority of cases the two conditions are localized in the same lung, and the other lung remains unimpaired. However, the processes do not remain localized but their metastases attack generally the same organs. The cancer tissue is destroyed by the tuberculosis, like every other tissue.

Zentralblatt für Chirurgie, Leipzig

59: 993-1040 (April 16) 1932

Use of Dry Suture Material. H. Boit.—p. 993.
Syphilis of Parotid. K. Ebhardt.—p. 995.
*Surgical Therapy of Gastric and Duodenal Ulcers with Especial Consideration of "Resection for Exclusion." O. Hoche and G. Marangos. —p. 998.
Infusion of Type Specific Serum. H. Kunz.—p. 1003.
Serotherapy of Gas Gangrene. E. Unger.—p. 1006.
Bilateral Ureterolithiasis. E. Friedländer.—p. 1011.
Treatment of Elephantiasis Nostras of Lower Extremity. A. Pop and I. Muresan.—p. 1015.
Method for Prevention of Intestinal Distention Following Abdominal Operations. K. Vogel.—p. 1018.
Remarks to Lexer's Paper on Adjustment of Articular Surfaces of Tibia by Elevation by Means of Bone Wedges. S. Zimmer.—p. 1021.

Surgical Therapy of Gastric and Duodenal Ulcers.—Hoche and Marangos mention the various surgical methods for the treatment of gastric and duodenal ulcers and give a tabular report of the methods that they themselves employed in 115 cases. They discuss particularly the treatment of the nonresectable duodenal ulcers, for which some authors advise "resection for exclusion," while others recommend gastro-entero-anastomosis. The tabular report shows that the authors performed resection for exclusion in ten instances, and gastro-entero-anastomosis in seven cases. This shows that they do not follow hard and fast rules but adapt the treatment to suit the case. Because the resection for exclusion is at present the focus of discussion, they give brief clinical histories of the ten cases in which this treatment was resorted to. The operation usually revealed an ulcer low down on the duodenum, which penetrated into the pancreas. In all cases the two thirds resection of the stomach and the resection of the pylorus was done. Prepyloric section of the antrum was never done, but the pylorus was always removed. The duodenum was resected close to the ulcer. Thus the author's method of resection for exclusion differs considerably from the simple exclusion of the pylorus and also from the usual method of exclusion for resection, since it is much more radical and removes the pylorus as well as two thirds of the stomach. After-examinations revealed that this method of treatment gives satisfactory results. The authors do not wish to discredit radical resection, but they emphasize that the resection for exclusion is advisable only for cases of ulcer deep down on the duodenum in which a radical operation does not seem feasible.

Zentralblatt für Gynäkologie, Leipzig

56: 961-1024 (April 16) 1932

Recent Results of Irradiation Therapy of Carcinoma of Uterus. F. Voltz.—p. 962.
Pregnancy Reaction on Ovary of Infantile Rabbit: Simplification of Hormonal Diagnosis of Chorio-Epithelioma. C. Clauberg.—p. 964.
Sizes and Weights of Fetuses in Earlier Months of Pregnancy. A. Gengenbach.—p. 972.
Testing Ecbolics by Registration of Uterine Movements of Cows During Puerperal Period. F. Benesch.—p. 975.
Clinical Aspects of Positio Facialis Mentosacralis. W. Walz.—p. 983.
Development of Lithopedion. F. Emmert.—p. 987.
*Ruptures of Uterus Resulting from Administration of Ecbolics During Period of Dilatation. S. Sztehlo.—p. 989.
Operative Repair of Complete Tear of Perineum. L. Hintzen.—p. 992.
*Dangers of Soap Enemas. R. Hubert.—p. 993.

Rupture of Uterus.—Sztehlo reports two cases of rupture of the uterus. The clinical histories show that the use of ecbolics during the period of dilatation involves certain dangers. In the first case the rupture followed the injection of an ecbolic, probably because the fetal head had deviated from the pelvic inlet. The rupture followed the steadily increasing uterine contractions. In the second instance the cause of the rupture could not be determined with certainty, for the patient had undergone several difficult deliveries and it is possible that the cervical scar may have ruptured without the injection of an ecbolic, yet it is also possible that the rupture resulted from the uterine contractions induced by the ecbolic. Because of the danger involved in the use of ecbolics during the period of dilatation, the author advises precaution. He thinks that hypophyseal extracts should be used only during the period of expulsion.

Dangers of Soap Enemas.—Hubert calls attention to the fact that the use of soap for enemas is quite common. Particularly midwives often give soap enemas before or after delivery. There are also reports about severe corrosions of the genitalia resulting from the use of soap as an abortifacient. In the majority of cases the use of a soap enema causes no lasting injury, but that there is a possibility of a severe corrosion of the rectum the author shows by reporting the history of a woman, aged 26. After an enema with soap water there followed a rectal hemorrhage. Rectoscopy revealed that the rectal mucous membrane was reddish and swollen. The condition became steadily more severe and the patient died. The author reports the results of the necropsy and cites factors that are evidence against a bacterially caused dysentery and for the causal significance of the soap enema.

Polska Gazeta Lekarska, Lwów

11: 249-268 (April 3) 1932

*Atypical Forms of Epidemic Encephalitis. E. Artwiński.—p. 249.
Biologic Assay of Adenine Derivatives Contained in Tissue Extracts and Preparations. J. K. Parnas and P. Ostern.—p. 250.
New Method for Determination of Time of Blood Coagulation. B. Szabuniewicz.—p. 251.
Case of Hemoglobinuria in a Child That Ingested Vaccinium Uliginosum. H. Frenklowa.—p. 255.
*Respiratory Disturbances and Their Mechanism in Various Clinical Forms of Dyspnea. M. Fejgin.—p. 256.

Atypical Forms of Epidemic Encephalitis.—Artwiński observed three cases of epidemic encephalitis during 1931. The first one was similar to schizophrenia, with distinct negativism and mutism. The second one resembled febrile dilirium by excitement, by hallucinations and by loss of senses of time and space. The author emphasizes the possibility of occurrence of atypical forms of epidemic encephalitis beyond the period of epidemic of this disease. Such atypical cases may be accompanied by marked psychic disturbances. Besides atypical also typical forms still occur, which are identical with those observed during the great epidemics.

Mechanism of Respiratory Disturbances.—Dyspnea, according to Fejgin, may be caused by chemical changes in, or near to, the respiratory center in the medulla oblongata. It may also be the result of changes in the whole organism, caused by disturbed circulation. Pathologic processes in the lungs, such as tumors and inflammations, cause dyspnea by limiting the respiratory surface of the lungs. At times, narrowing or obstruction within the bronchi or larynx is responsible for dyspnea, as in bronchial asthma and diphtheria. In the latter instances the insufficiency of oxygen supply and of oxidation in the arterial blood causes faulty oxidation of the acid products of metabolism. This again tends to acidify the blood, which stimulates the respiratory center to increased activity and overventilation of the lungs. The mechanism is different when dyspnea is accompanied by insufficiency of the circulation. Here the deficiency of oxygen leads to acidification of the tissues and thereby to stimulation of the respiratory center. In other words, dyspnea with acapnial alkalosis is the result of anoxemia of the respiratory center, while dyspnea with acidosis is a symptom of general anoxemia, caused by advanced disturbance of the circulation and of the exchange of gases in the lungs.

Warszawskie Czasopismo Lekarskie

9: 145-168 (Feb. 18) 1932

Melody of the Heart (C'tn.). A. Rytel.—p. 145.
*Etiology of Agranulocytosis (Tuberculosis of Bone Marrow). M. Iberbein.—p. 148.
Treatment of Whooping Cough by Specific Vaccine. S. Kramsztyk.—p. 152.
Blood Coagulation and Serologic Phenomena (C'cn.). H. Makower.—p. 152.
Ethics and Medical Ethics. Z. Srebrny.—p. 163.
On Hygiene and Occupation of Hygienist (C'cn.). M. Kacprzak.—p. 164.

Etiology of Agranulocytosis.—Iberbein describes an agranulocytic syndrome which appeared during the course of pulmonary tuberculosis in a child aged 8 years. As a result of spreading of the tuberculous process by way of the blood stream, infection of bone marrow took place. Injury to the granulocytopoietic system by Mycobacterium tuberculosis followed. This led to the appearance of the agranulocytic syndrome.

Sovetskaya Vrachebnaya Gazeta, Leningrad

Feb. 15, 1932, number 3, pp. 129-192

Intestinal Protozoa and Their Clinical Significance. A. A. Filipchenko.—p. 131.
Course and Prophylaxis of Purulent Pleurisy of Children. A. Petryaeva.—p. 135.
Recognition of Functional Presystolic Murmurs. B. I. Trusevich.—p. 140.
Acute Septic Tonsillitis. A. Kh. Minkhovskiy.—p. 143.
Blood Picture in Various Forms of Exophthalmic Goiter. E. I. Galperin and I. Ya. Sosnovik.—p. 145.
*Murata's Ring Test in Serodiagnosis of Syphilis. O. N. Zepalova.—p. 149.

Murata's Ring Test in Serodiagnosis of Syphilis.—Zepalova studied the ring test of Murata, in which the antigen is a cholesterolized extract of ox heart prepared according to the method of Nagayo and Nobechi. In summary, the test consists of layering small quantities of inactivated serum with titrated antigen which has been diluted with physiologic solution of sodium chloride (1:10) and mixed for ten minutes not earlier than one hour previously. The test is read after forty-five minutes and again after two to three hours; it is considered positive when there is a white ring at the point of contact of the serum and antigen. The author examined 1,244 serums by this method, checked by the Wassermann and also one other test: these included serums from persons with undiagnosed syphilis and other conditions (pregnancy, chancroid, gonorrhea, tuberculosis). In 95.82 per cent (534 positive and 658 negative) this test coincided with the recognized tests for the diagnosis of syphilis. The author concludes that the test is highly specific and is comparable to the Kahn and the Wassermann test.

Feb. 29, 1932, number 4, pp. 193-256. Partial Index

Prophylaxis in Intestinal Diseases of Children. M. Danilevich.—p. 195.
Immunizing Properties of Specific and Nonspecific Phases of Paratyphoid Group of Bacteria. V. Berman and I. Rogozin.—p. 199.
Vitaminogen (A, B, C, D) in Diagnosis, Prophylaxis and Therapy of Evident and Latent Avitaminosis in Laboratory and Clinic. I. A. Golyanitskiy.—p. 205.
Therapy in Postpuerperal Period. M. I. Litvak.—p. 209.
Indication for Operation in Acute Appendicitis. A. P. Nadein.—p. 212.
Cranial Sounds of Venous Origin. V. A. Krikova and A. V. Drojennikova.—p. 214.
Action of Camphor on Cardiovascular System. E. I. Speranskaya-Stepanova.—p. 216.
Action of Various Plant Substances on Secretion and Excretion of Bile. M. K. Petrova and S. M. Riss.—p. 218.
Influence of Morphine on Diuresis. G. D. Derchinskiy and E. N. Speranskaya-Stepanova.—p. 220.
*Subcutaneous and Local Vaccination Against Typhoid. V. G. Yaremenko.—p. 222.
*Treatment of Psoriasis by Injection of Scales. D. A. Elkin.—p. 223.
Determination of Chlorides in Urine Using Votoček's Method. S. R. Mardasheva.—p. 243.

Subcutaneous and Local Vaccination Against Typhoid.—Yaremenko undertook to determine the relative immunizing properties of typhoid vaccine administered by the subcutaneous and the enteral routes. Guinea-pigs of approximately equal weight were divided into four groups. The first two groups were vaccinated subcutaneously with vaccines treated with formaldehyde and phenol, respectively; the other two groups were vaccinated by mouth with the same vaccines. The author concludes that in respect to immunizing properties, antibodies, and protection against lethal doses, the enteral route is not as efficacious as the subcutaneous route. In spite of the larger agglutinative titer of the serum when the vaccine treated with formaldehyde is used, the vaccine treated with phenol guarantees greater protection against lethal doses (subcutaneous route); the two vaccines afford the same degree of protection when the enteral route is used. The subcutaneous route is not only more economical but more effective in immunizing *en masse* against typhoid. The enteral route should be used only when the subcutaneous route causes strong reactions.

Treatment of Psoriasis by Injection of Scales.—Elkin considers the treatment of psoriasis in the light of protein therapy in which keratin and the toxic cellular proteins lead to desensitization of the skin and at the same time stimulate the organism to the development of antibodies. Eight patients from 15 to 45 years of age were subjects for the study. From 1 to 2 cc. of a 1 per cent solution of the scales from psoriasis lesions were injected daily or every other day: two patients received injections of unsterilized scales mixed with physiologic solution of sodium chloride; two patients received injections of sterilized scales mixed with sterilized physiologic solution of sodium chloride, while the third group (nine patients) received injections of a 1 per cent mixture of scales in 96 per cent alcohol. (The scales, when autoclaved, were ground in a mortar first in a dry state and then with the addition of several drops of the diluent which was to be finally used to prepare 1 per cent mixtures.) In the first group (unsterilized scales) there was an increase in temperature, the local reaction was marked, and the therapeutic results were minimal. In the second group (sterilized scales) there was no local or general reaction, slight edema at the site of injection, and no perceptible therapeutic effect. The third group (alcoholic solution of scales injected intramuscularly—in the first two groups the injections were given subcutaneously), which received from fifteen to seventeen injections (six patients) and from six to eleven injections (three patients), showed comparatively insignificant local reactions; the pain increased markedly in the first twenty minutes and then slowly subsided; the local reaction disappeared entirely within twenty-four to thirty-six hours and improvement followed. One patient in the last group recovered completely within one month and the other eight showed various degrees of improvement with blanching of the patches and decrease in the number of scales. The author concludes that treatment, consisting of injections of solutions of scales from psoriasis lesions in 96 per cent alcohol, has a therapeutic effect in some cases but cannot be recommended for general practice unless it is given under clinical conditions.

Vrachebnoe Delo, Kharkov

14: 1121-1256 (Nov. 30) 1931. Partial Index

*Gaseous Emboli in Right Side of Heart in Course of Artificial Pneumothorax. E. D. Goldovsky.—p. 1136.
*Spontaneous Healing in Rupture of Gravid Uterus. V. M. Khmilivsky.—p. 1166.
*Clinical Aspect and Therapy of Pyuria in Nurslings. S. V. Rodkin and D. D. Kaganov.—p. 1170.

14: *1257-1392 (Dec. 31) 1931.* Partial Index

*Clinical Aspect and Therapy of Pyuria in Nurslings (C'cn.), S. V. Rodkin and D. D. Kaganov.—p. 1279.

Gaseous Emboli in Heart in Artificial Pneumothorax.—Goldovsky states that gaseous emboli and pleural shock are not infrequent during artificial pneumothorax. He reviews the literature, discusses a personal observation, and concludes that distant "mill-like" cardiac murmurs in patients with artificial pneumothorax should lead one to consider gas in the right side of the heart. This phenomenon is designated by one worker as gallop rhythm. Besides this mill-like rhythm there probably are still other symptoms of gaseous embolism of the right side of the heart which are still unrecognized. During the course of the treatment with artificial pneumothorax, and in the presence of murmurs bringing to mind friction rubs of the pericardium, one must not forget that murmurs due to pleural friction may be the beginning of gaseous emboli. According to observations from the literature, gaseous emboli of the right side of the heart during artificial pneumothorax are not highly dangerous, whereas the mortality from emboli in the left side of the heart is high and these emboli should be accorded more consideration than they have received in the past.

Spontaneous Healing in Rupture of Gravid Uterus.—Khmilivsky states that his own observations and a review of the literature indicate that rupture of the uterus during pregnancy and delivery occurs in the proportion of 1 to 2,017. Rupture of the uterus occurs more often in the second period than in the first period of pregnancy, more often in the multipara than in the primipara, and more often in the poor, village and working woman. Spontaneous healing in rupture of the gravid uterus occurs seldom. Spontaneous healing can occur either through encapsulation of the fetus or of the parts lying in the abdominal cavity, by suppuration and then egress through the suppurating fistulas. After spontaneous healing a woman can hardly be physically fit, although she may appear to be so, since encapsulated pieces of fetus have remained in the abdominal cavity. A suppuration begun in the fetus can continue for five years. The fetal fragments that remain in the abdominal cavity must be removed surgically. Spontaneous healing in rupture of the uterus in the broad sense of the term does not occur.

Therapy of Pyuria in Nurslings.—The material of Rodkin and Kaganov consisted of seventy-two cases of pyuria in nurslings from the age of 1 month to 2 years (fifty-four were in the first year of life and 73.5 per cent were girls). Their observations were as follows: Pyuria was found together with influenza in thirty-four patients and with severe nutritional deficiencies in twenty-four patients. There was little proof in favor of Birk's exudative diathesis. In regard to symptomatology, it was found that the pyuria was so closely associated with the fundamental disturbance that no particular symptoms could be attributed specifically to the pyuria. The diagnosis is based on examination of the urine. The chief symptoms are increase in temperature, loss of appetite, vomiting and pallor. The body temperature is usually subfebrile (twenty-six cases) or irregular (twenty-eight cases); five patients had normal temperatures. There was often a discrepancy between the character and the height of the temperature curve on the one hand and the severity of the disease on the other hand. The leukocyte count did not seem to be of value in the prognosis or diagnosis, whereas the neutrophils were increased. Deviation of the blood picture to the left was most marked in disturbances with a bad prognosis. The mortality (mostly in the first six months) was 22 per cent. In view of the results reported in the literature and their own observations, the authors believe that treatment should be aimed at a general and not at a local disturbance. There are no specific medicinal agents or methods for treatment. The only rational course in prophylaxis and treatment is to be aimed against chronic and acute disturbances in nutrition. To increase the bodily resistance, control of the diet and plenty of fresh air are necessary.

Finska Läkaresällskapets Handlingar, Helsingfors

74: 119-222 (Feb.) 1932

*Late Results in Tuberculous Spondylitis Treated with Operative Fixation, Mainly According to Albee. F. Langenskiöld.—p. 128.
Erythema Nodosum and Tuberculosis. H. Ernberg.—p. 164.
Peroral Cholecystography. G. Jansson.—p. 179.

Tuberculous Spondylitis Treated with Operative Fixation.—Langenskiöld reports fifty cases in patients over 15 years and sixteen in patients under 15 years of age. He concludes that in adults operative fixation of the spine in tuberculous spondylitis entails so slight a risk and offers so marked an advantage for the patient that the procedure may be recommended as a normal method, to be rejected only in case of special contraindications. In children the operative risk is greater, the results more uncertain, and the advantage definitely less; here he would reserve operative treatment for selected cases in which nonoperative treatment does not hold out hope of recovery without kyphosis.

Ugeskrift for Læger, Copenhagen

94: *349-370 (April 7) 1932*

*Injection Treatment of Gonorrheal Urethritis in Men. S. Lomholt.—p. 349.
*Injection Treatment of Varices: Immediate Results; After-Examinations. K. Kettel.—p. 356.

94: 371-398 (April 14) 1932

*Injection Treatment of Gonorrheal Urethritis in Men. (C'tn.) S. Lomholt.—p. 371.
Some Cases of Congenital Syphilis. C. Schwensen.—p. 378.
Tire-Tread Marks. K. K. Ortmann.—p. 380.
Partial Cheiloplasty and Transplantation from One Person to Another. E. Dujardin.—p. 382.
Automatic Pipet. V. Møller-Christensen.—p. 383.

Injection Treatment of Gonorrheal Urethritis in Men.—Lomholt emphasizes the importance of thorough and careful lavage of the urethra or, in cases of injections, that three or four should be given during each treatment, partly because of the difficulty in bringing the injected solution into effective contact with the entire mucous membrane on one injection. He asserts that even the shortened injection period of from three to five to ten minutes now employed by most physicians can be further reduced to from one half to one minute without loss of effect, as the main portion of the injected silver will in this time be changed to but slightly active silver chloride. This holds unconditionally for silver nitrate and to a marked degree for strong silver protein. The reduction in the time of treatment is of great assistance in the performance of the treatment. The concentration chosen should be such as will produce a mild reaction in the mucous membrane, every more pronounced irritation being avoided.

Injection Treatment of Varices.—Kettel's material comprises 629 patients treated, with after-examination in 421. The immediate results of injection treatment in uncomplicated varices showed 94.5 per cent to be without symptoms and 2.5 per cent definitely improved without the use of compression bandages. In patients with eczema, the treatment was usually ineffective. After one year 91.5 per cent were without symptoms, with recurrence, however, in one third. After at least five years one third continue free from symptoms and one third are definitely improved without the use of compression bandages. Healing occurred in seventy-two out of ninety-four patients with ulcer. After-examination from one to five years later showed continued healing in fifty-two. The author considers injection treatment superior to operative treatment.

Upsala Läkareförenings Förhandlingar, Uppsala

37: 215-309 (March 30) 1932

Iron Metabolism in Normal Breast-Fed Infants During First Year of Life. A. Wallgren.—p. 215.
*Renal Tuberculosis and Pregnancy. H. Naeslund.—p. 243.
Cystinuria in Sweden. C. T. Mörner.—p. 295.
Case of Aplasia of Left Parotid Gland. G. Thorsén.—p. 303.
Rare Anomaly of Supraclavicular Nerve (Perforation of Clavicle). O. Ahlborg.—p. 307.

Renal Tuberculosis and Pregnancy.—The results of Naeslund's investigations in the twelve cases reported afford confirmatory evidence that pregnancy exerts a harmful effect on bilateral renal tuberculosis. In unilateral renal tuberculosis after nephrectomy the function of the remaining kidney may also be affected by gravidity, particularly after delivery. In these cases the kidney function must be closely followed by kidney function tests during pregnancy, in order, if it becomes necessary, to terminate the pregnancy betimes.

CORRECTION

Convulsions in Infancy.—In the abstract of the article by Dr. Stanley Graham from the *Glasgow Medical Journal* in The Journal, June 18, page 2250, the metric equivalents of the dosage of chloral hydrate should have been as follows: 2 to 4 grains, 0.13 to 0.26 Gm.; 5 grains, 0.3 Gm.; 1 grain, 0.065 Gm.

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THE PROGRESS OF OPHTHALMOLOGY

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The growth of ophthalmology in recent centuries has been vast. Its progress has been remarkable for rapid acceleration. The accumulated mass of ophthalmologic literature has attained huge proportions. It is interesting to pause and survey the paths by which we have arrived at the present state of the science to which this section is dedicated. Such a survey may help to appreciate better what has been accomplished, and what are the factors to which we are indebted for aid in our advance. It will also indicate how such progress has been achieved.

The history of ophthalmology, the history of medicine and the history of the physical sciences go back to a common childhood. In their development they have often been united or closely related, and they have generally been subjected to the same influences. Their development presents interesting analogies.

The ancient Greeks assembled much knowledge concerning the physical world. They laid the firm groundwork of physics, astronomy, mathematics and medicine, centuries before the common era began. They thought deeply concerning natural philosophy, and their speculations brought forth the conceptions on which philosophy, was built. Their wisest teacher, Aristotle, maintained that the source of all knowledge is experience, and that deduction is sound only when based on ascertained facts; he emphasized the essential necessity of careful observation. Unfortunately those who followed him, in their reverence, accepted his system as the complete expression of truth. They worshipped at the altar of authority, and science could not progress; their error led to scientific stagnation. It was not until the thirteenth century that Roger Bacon proclaimed that sophistry cannot be distinguished from demonstration unless we verify our conclusions by experiment and practice.[1] Many years passed before Leonardo da Vinci (1452-1519) and Copernicus (1472-1543) in the fifteenth century and their great followers in the sixteenth century brought about the renaissance of the physical sciences; they introduced experiments which in the seventeenth century merged into an experimental method. All this increased the accuracy of observations and made possible the verification of hypotheses. Thus was modern science born.

Ancient chemistry, aside from methods of obtaining certain metals, was largely metaphysical. The desire to produce gold gave rise to alchemy and to great extension of random experiment; but again it was not until the sixteenth century that a new purpose was infused into chemical studies, when Paracelsus (1493-1541) urged that "the true use of chemistry is not to make gold but to make medicines."

Medicine followed a course similar to that of the physical sciences. When we read some of the ancient Greek medical writings, we are struck with wonderment and admiration and are no less perplexed to find how centuries passed after them in which there was little advance and even great retrogression. The classical period of Greek medicine was in the fifth century B. C., the period of Hippocrates. Medicine had freed itself from magic and incantations, and had come to be founded on observation and experience. Many signs of disease were clearly recognized, and the art of prognosis was developed. As Greek students had met the problems of the physical sciences, so they were led to find an explanation of health and disease by speculation. They brought forth the humoral theory that health is conditioned by balance or equilibrium of the humors; disease by their imbalance. The theory was so simple in form and so satisfactory to the speculative taste that it ceased to be theory and became dogma. The Coan physicians did not recognize or label particular diseases, and hence could not develop diagnosis. Manifestations of disease in various organs were therefore treated only by very general measures and not by local treatment. Anatomy was of no particular interest to them, and was not cultivated until later, and then especially at the Greek School of Alexandria. But much emphasis was laid on sensible hygiene. The Cridian physicians aimed at special pathology, but stressed the disease more than the patient, and mistook mere symptoms for individualized diseases. Speculation continued to flourish, and various systems arose; there were even those who opposed the humoral theory; but while observations were gathered, the great possibilities of hippocratic medicine were not developed, and when, after many centuries the accumulated body of knowledge was systematized by Galen in the second century A. D., his formulation of humoral medicine became the fixed canon for many centuries that followed. Galen's followers were guided by inherited teachings which they believed were all sufficient; they learned what their books taught, held learned disputations and neglected the art of careful observation.

Again it was not until the Renaissance that the studies of Leonardo da Vinci and especially those of Vesalius (1514-1564) established modern anatomy in the middle of the sixteenth century, to be followed in the seventeenth century by Harvey's demonstrations

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[1] Buckley, H.: A Short History of Physics, London, Methuen & Co., Ltd., 1927, p. 10.

of the circulation of the blood (1616-1628), founding the science of physiology, and in the eighteenth century by Morgagni's "De Sedibus" (1761),[2] laying the groundwork for pathology.

Anatomy, physiology and pathology are the foundation on which the structure of modern medicine has been built. The building stones have been gathered in many fields and quarries; the rule that has been followed in the building has been: *observe and experiment!* However, it is well to remember that as progress in medicine was long retarded by the tenacious thraldom of ancient authority, so in later periods it was again hindered by unfounded speculations, uncontrolled by experiment.

The history of ophthalmology is bound up with that of medicine and the physical sciences. From the meager literary remains extant, we find that the Greeks, especially those of the later centuries, had a fair understanding of the structure of the eye. The names they gave to the various coats and humors have been transmitted in translation, and are, in large part, those we still use. We also have in common usage some of the medical terms which the ancient Greeks coined. The Greeks had considerable knowledge of pathologic conditions of the parts of the eye that are visible externally, and in their later period practiced couching for cataract. Their erroneous assumption that the lens was the essential factor in vision unfortunately persisted through the centuries. The humoral theory of pathology led the followers of Hippocrates (Coan school) to rely almost entirely on general treatment with the hope of reestablishing the humoral equilibrium, and to give no study to local treatment except in conditions due to local injuries. The Cridian physicians aimed at specific therapy, but their only remedies were purges, milk and whey. This accounts for the universal treatment by bleeding for such conditions as the ophthalmias, a practice that persisted into recent times. Hippocrates used but one form of local treatment for relief of pain in ocular disease—hot applications.

The ophthalmology and the science of optics which the Greeks founded were advanced only little by the Byzantines, who preserved their literary remains. The Arabians, on the other hand, gave much attention to diseases of the eyes and introduced new operations and remedies; they wrote numerous works on these subjects and were far advanced when Greek-Arabic medicine became known in Europe. Knowledge of the diseases of the eye had fallen to low estate in Europe during the Middle Ages. It had not even the dignity of general medicine. The practice was in the hands of quacks and itinerant healers, who were neither physicians nor surgeons.

The Renaissance engendered the struggle against the traditional autocracy of authority. Added to this, the newly discovered art of printing afforded a new means of spreading knowledge. These and other factors gave birth to a new spirit of investigation. But even the Renaissance brought no immediate change in ophthalmology. The introduction of the new methods, the modern plan of accurate observation and experimental confirmation, did not manifest itself equally or simultaneously in all departments of science. In ophthalmology it did not blossom out fully until the nineteenth century.

Vesalius, in his monumental work, did little to correct the old and then current erroneous notions concerning the structure of the eye, though he made some interesting observations.[3] Those who followed Vesalius and applied his methods of accurate dissection and delineation greatly advanced the knowledge of the anatomy of the eye, and the names of some have lasting memorials in our anatomic nomenclature. Progress was slow, and it was not until the middle of the seventeenth century that great advances were made.[4] It must be noted that the progress made in the study of the structure of the eye was for a long time of little influence on clinical ophthalmology, but neither did the general anatomic advances in these early days exert any special influence on the practice of surgery.

Just as the study of form and structure of the body was naturally followed by the study of function, so the study of the physiology of the eye followed that of its anatomy. In 1600, Kepler laid the foundations of modern knowledge of physiologic optics. We must, however, bear in mind that spectacles had been invented three hundred years before and had long been in common use. Following Kepler, during the seventeenth and eighteenth centuries, Scheiner, Mariotte, Huygens and Porterfield made important discoveries in physiologic optics. Again we must note the indifference of practitioners to these advances, made chiefly by physicists, and the feeble influence they had on ophthalmic practice. Perhaps it may not be inappropriate to recall that Kepler excused errors of one of the great physicians writing on the eye "because he is a physician," and a hundred years later Maitre-Jan gave as the reason for his detailed account of the physiology of vision the great ignorance of optics among surgeons.[5]

The erection of the third pillar on which modern ophthalmology rests was begun by Morgagni in 1761, in his studies of cases presenting various pathologic conditions of the eye.[6] A few cases had been published earlier, but Morgagni's work was much more systematic; it was epoch-making in ophthalmology as it was in general medicine. He was followed by Wardrop, whose "Essays on the Morbid Anatomy of the Human Eye," published in 1808, is a work that is instructive to read even today.[7]

It has been pointed out that the progress made in the study of the anatomy and physiology of the eye bore little relation to clinical practice. The explanation is made clear when we remember the strong prejudice of the medical profession against oculists and their operations. Throughout the fifteenth and sixteenth centuries the latter were in sole possession of this field. It was only toward the end of the sixteenth century that works appeared which gave evidence of interest on the part of surgeons in diseases of the eye. Besides a chapter on these diseases in some works on surgery published during the latter part of the sixteenth and in the seventeenth century, there are the books of Bartisch of 1583 in German[8] and of Guillemeau of 1585 in

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[2] Morgagni, J. B.: De sedibus et causis morborum per anatomen indagatis libri quinque, Venetiis, ex typog. Remondiniana, *1761.*

[3] Such as that the crystalline lens has the power of a glass lens to enlarge the image of underlying objects, that the retina is the main factor in vision, and that the optic nerve leading to a blind eye was found thin and wasted; the last was the earliest pathologic observation of the kind.

[4] The invention of the microscope became of great aid. Leuwenhoeck (1632-1723) described the fibers of the lens, the layers of the cornea and the rods and cones of the retina. The first complete monograph on the anatomy of the eye was published by Zinn in 1755 (descriptio anatomica oculi humani in conibus illustrata, Göttingen, A. Vandenhoeck). Soemmerring's "Abbildungen des menschlichen Auges" appeared in *1801.*

[5] Maitre-Jan, cited by Hirschberg, Julius: Geschichte der Augenheilkunde, in Graefe-Saemisch: Handbuch der gesamten Augenheilkunde, ed. 2, Leipzig, Wilhelm Engelmann, vol. 13, p. 425.

[6] Morgagni, J. B.: Seats and Causes of Diseases, translated by Benjamin Alexander, London, 1769, vols. 1 and 3.

[7] Wardrop, J.: Essays on the Morbid Anatomy of the Human Eye, London, 1808.

[8] Bartisch, Georg: Augendienst: Newer und wolgegründter Bericht von Ursachen und Erkentnus aller Gebrechen, Schäden und Mängel der *Augen und des Gesichtes, Dresden, M. Stöckel, 1583.*

French,[9] devoted only to diseases of this organ. Gradually the subject had become a branch of surgery. With this a new era of progress dawned. Brisseau, in 1709, demonstrated by the experiment of couching and subsequent dissection of the eye that the couched cataract was the opaque lens. From ancient times oculists had couched cataracts in ignorance of what they were doing. It was believed that the lens was near the center of the eyeball and that any injury to it would produce complete blindness.[10]

New works on diseases of the eye based on original observations and experience were published by Maitre-Jan (1707) and St. Ives (1722), translated into many languages and frequently republished. In England, progress was slower, and it was only toward the end of the eighteenth century that English surgeons began to interest themselves in the treatment of diseases of the eye.

Much new experience was gathered in the eighteenth century; important observations were made, but the great and outstanding contribution to science was made by Daviel about the middle of the century—the extraction of cataract.

The medley of ophthalmias, largely tainted by ancient humoral theories, slowly gave way to systematic classification. St. Ives was the first to describe gonorrheal ophthalmia, attributing it to suppression of the urethral discharge. At the end of the eighteenth century, Ware definitely maintained "the possibility of communicating" the inflammation directly to the eye, and urged that great care should be used in handling cloths applied to the patient's eye for this reason. Nevertheless, eminent surgeons like Scarpa and Beer continued to teach that gonorrheal matter entering the eye produces only slight inflammation, and Vetch (1820) made experiments endeavoring to prove this. It is amazing to see how the humoral theory persisted and how it inhibited medical progress. Centuries were spent in conflict, fought with fanatical fury, before it was finally and completely overthrown in the nineteenth century. There is no better example in history of the harmful effects of false doctrines, theories and systems built on speculation and unverified by investigation and experiment.

The forces of progress slowly became overwhelming, and there are clear evidences of this in the clinical writings on ophthalmology. In Lawrence's "Venereal Diseases of the Eye" (1830),[11] clear distinctions are drawn between the syphilitic and the gonorrheal ocular diseases, in which transference of the disease directly to the eye is definitely affirmed. A few years later the extraordinary experiments of Piringer,[12] made by direct transference of gonorrheal matter to the eyes of persons quite blind (from more deeply seated diseases), established the facts. Piringer made his experiments under varied conditions; his records are accurate; his studies were made with precise method, which we regard as completely modern.

In 1750, the first description of the frequency and importance of ophthalmia neonatorum was published and its cause assigned to gonorrheal infection (Quelmalz). Trachoma was not recognized in modern times until the early part of the nineteenth century, although the ancient Greeks had described it, had given it its name and had used the mechanical treatment of brushing the granulations. In the early years of the nineteenth century, Schmidt and Beer, the leaders of the Vienna school, described iritis definitely and distinguished it from the group of ophthalmias. Thus, by these few examples we see how our clinical science progressed—slowly but definitely.

The nineteenth century ushered in one of these great creative geniuses to whom science is indebted in so many fields—Thomas Young—whose studies added much to the understanding of the physiology of vision. His observations were followed a quarter of a century later by Purkinje's, and were capped after another such interval by those of Helmholtz.

Study of the microscopic anatomy of the eye and its pathologic histology progressed notably during the first half of the nineteenth century. In still another direction advances were made of supreme importance to our science, in the isolation of the mydriatic and miotic alkaloids. Belladonna had been known since the early sixteenth century, and extracts had been used in diseases of the eye, but it was only in 1831 that atropine was isolated.[13] It was only after alkaloids had been extracted in pure form that their effects on the eye could be carefully studied and applied with precision. Nor were these the only substances that chemistry presented to us in that period. I need refer only to the iodide of potassium, which was introduced in 1821, and to phenol, which was introduced in 1834.

Returning to the clinical phase, we find that a work like MacKenzie's "Diseases of the Eye" [14] has lost the quaintness of older literature, and in size and general appearance resembles works like those of de Schweinitz or Fuchs. We are amazed at the wealth of knowledge it reveals, and our astonishment is all the greater when we consider the fact that the ocular examinations of that day were unaided by instruments.[15]

The progress made during the first half of the nineteenth century was due to the various factors indicated. In addition, the advances made by general medicine and surgery exerted a stimulating effect on the progress of ophthalmology, for these had, in a large measure, freed themselves from uncontrolled speculation and applied more and more the rule to observe and experiment. The difficulties in deducing general rules and laws in the observation of medical and surgical cases, seen under such a variety of conditions, were recognized by Louis (1787-1872), who suggested the statistical method for the study of etiologic and therapeutic data, a method that has been used to ever increasing advantage in ophthalmology. As in all branches of science, speculation is essential, but it must be subjected to the test of accurate observation and adequate experimentation.

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[9] Guillemeau, Jacques: Traité des maladies de l'oeil, qui sont en nombre de cent treize, ausquelles il est suject, Paris, C., Massé, 1585.

[10] Brisseau's discovery was so revolutionary that his colleagues in Paris urged him not to publish it, for the sake of his reputation.

[11] Lawrence, William: Venereal Diseases of the Eye, London, J. Wilson, 1830.

[12] Piringer, Joseph F.: Die Blennorrhoe am Menschenauge, Grätz, F. Fersth, 1841.

[13] Atropine was isolated in 1831, hyoscyamine in 1833, cocaine in 1855, physostigmine (eserine) in 1864, pilocarpin in 1875 and homatropine in 1879.

[14] MacKenzie, W.: Diseases of the Eye, ed. 1, London, Longmans [and others], 1830; followed by the editions of 1835, 1840, 1854, and American editions in 1833 and 1855, besides German, French and Italian translations.

[15] It is true that MacKenzie examined "narrowly the surface of a cataractous opacity . . . while concentrating the light upon it by means of a double convex lens," and G. Frick of Baltimore (A Treatise on Diseases of the Eye, Baltimore, F. Lucas, Jr., 1823, p. 79), in discussing opacities of the cornea, examined "the eye laterally, with a magnifying glass." Purkinje used lateral focal illumination in 1823, and even combined it with the use of a microscope in his studies of the iris structure. But the method was so little used even in the early fifties that in two articles that appeared in the first volume of Graefe's Archiv für Ophthalmologie, Hemholtz (in studies on the accommodation) and Liebreich found it necessary to call attention to its great value.

So ophthalmology, when the half century mark was reached, was of far different aspect and was practiced under conditions quite different from those of earlier centuries. Ophthalmology, which had once been despised as disreputable by the medical profession, had later been accepted as a poor foundling by the surgeons, had gradually found those who were ready to devote themselves exclusively to her service and had finally become the legitimized daughter. But like many deep-seated prejudices, this one persisted until very recent times. Weir Mitchell has said: "I can remember when older physicians refused to recognize socially a man who devoted himself to the eye alone."

The middle of the nineteenth century has been described by Jeans as "a time when science was advancing at a greater pace than had ever been known except possibly for two brief periods . . . in the lives of Galileo and Newton respectively." It is not without significance to note that in ophthalmology it produced a galaxy of scientists: Helmholtz, physicst and physiologist, whose great contributions were crowned by his gift of the ophthalmoscope;[16] Donders, physiologist and ophthalmologist, who reduced the whole subject of refraction to a form so simple that every physician interested in the eye could understand it; Bowman in London; Arlt, then in Prague, Desmarres in Paris, and others. And in this brilliant firmament there appeared, like a great comet, Albrecht von Graefe, who applied the invention of Helmholtz to clinical use, and with his colleagues and disciples disclosed to science many of the secrets of that hitherto mysterious and hidden chamber behind the pupil of the eye. Helmholtz published the description of his ophthalmoscope in the autumn of 1851;[17] von Graefe returned to Berlin to devote himself to ophthalmic practice in November, 1851, and found the publication of Helmholtz on his desk. The speed with which the instrument was put to use is shown by the number of articles and monographs that appeared in the next few years, and especially in the work that emanated from von Graefe and his disciples.[18]

The genius of von Graefe, Helmholtz, Donders and of the stars of lesser magnitude and the greatly increased number of those now interested in the practice of ophthalmology in a measure explain the rapidity with which our science now developed. A vast number of new clinical pictures were revealed by the ophthalmoscope; their relation to other constitutional or organic diseases was discovered; but besides ophthalmoscopic examination, many other methods of examination of the eye and of vision were cultivated: careful examination and measurement of acuity of vision, of peripheral vision, of the light sense; methods of measuring and recording various forms of diplopia, ophthalmometric measurements, etc. The visus defiguratus, interruptus, nebulosus and reticulatus, still defined in the works of the late forties, disappeared, and defects of the field of vision were clearly described by von Graefe and others. These examinations were made by means of screens until the Foerster perimeter was invented in 1869. We must not overlook the fact that although the extension of the fields of vision was known to the ancients, it was Thomas Young, in 1801, who made the first careful measurements and described the limits with accuracy, and Purkinje constructed a perimeter in 1825. The results of his investigations are most interesting, for he described the characteristic differences between direct or central and indirect or peripheral vision, the progressive diminution of visual acuity toward the peripheral limits and also the relative color-blindness of the peripheral field. Von Graefe, a quarter of a century later, introduced this most important method of examination into clinical practice.

We have neither the time nor the need to consider the introduction of the photometer, ophthalmometric studies, etc., but we must take notice of the avidity with which ophthalmologists now accepted these varied instruments of precision and cultivated exact methods of investigation and study. It had not always been so. Weir Mitchell, in one of his classic essays,[19] called attention to this fact. Though Galileo invented a thermometer near the end of the sixteenth century and not long after one was constructed to indicate the temperature in the mouth (Santorini), two and a half centuries passed before the work appeared which is the "foundation of our present clinical thermometry" (Wunderlich, 1868). It was also Galileo who used his pulse to count the vibrations of pendulums and later applied the pendulum in constructing the clock. Kepler before 1600 recorded his counting the pulse. "Pulse measures" were devised at an early period. Two hundred and twenty-five years ago an English physician (Floyer) described a "physician's pulse watch," and almost a century later this "instrument of precision" was "revived." Still it was not adopted in medical practice. Years of struggle over fanciful and special pulses for each variety of disease passed by. It is scarcely a century since the accurate timing of the pulse has become general. It requires more than an actual discovery or invention to make it of service. The time must be ripe, and the minds of other workers must be ready to make use of it.

Nowhere has it been shown more clearly than during this period of the history of ophthalmology that "the use of instruments of precision . . . has tended to lift the general level of acuteness of observation" (Weir Mitchell) and that "the practice of the experimental method endows with a new vision both the experimenter himself, and through his influence those who are associated with him in medical science, even if these be not themselves actually engaged in experiment."[20] Thus it is that instruments of precision have not only made observations possible which were wholly beyond the powers of the unaided senses, but the "new vision" has discovered a thousand clinical facts which lay open to view to numerous generations of physicians, but were unseen by them until their eyes had thus been trained.[21]

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[16] It is interesting that Wharton Jones, in his review of the early literature on the ophthalmoscope (Brit. & Foreign Med. & Chir. Rev., October, 1854), mentioned the following: "It is but justice that I should here state, however, that seven years ago (1847) Mr. Babbage showed me the model of an instrument which he had contrived for the purpose of looking into the interior of the eye. It consisted of a bit of plain mirror, with the silvering scraped off at two or three small spots in the middle, fixed within a tube at such an angle that the rays of light, falling on it through an opening in the side of the tube, were reflected into the eye to be observed, and to which the one end of the tube was directed. The observer looked through the clear spots of the mirror from the other end." Wharton Jones makes no further mention of Babbage. In "The Principles and Practice of Ophthalmic Medicine & Surgery" (ed. 3, London, J. Churchill & Sons, 1865), he described "the ophthalmoscope in its original forms as invented by Dr. Helmholtz." It is surprising to read in Duke-Elder's "Recent Advances in Ophthalmology" (Philadelphia, P. Blakiston's Son & Co., 1927, p. 14): "The greatest stimulus [illegible] ever known was the introduction of the [illegible] in the middle of the last century." [illegible] interesting to note that Purkinje, in 1823, observed accidentally that he could see the eyeground of a dog by means of the light of a candle reflected by his concave glasses. He then tried the experiment on human beings, and observed the same phenomenon. He experimented with an artificial eye which he constructed so as to be able to fill the interior with clear or cloudy fluids, and he maintained that "no membrane or internal liquid substance (of the eye) will now remain hidden to the inspecting eye with light properly reflected, which . . . will prove not without use in the diagnosis of the eyes." But no attention was paid to this until it was disinterred three-fourths of a century later by the historian Hirschberg (Geschichte der Augenheilkunde, in Graefe-Sameisch: [illegible] Augenheilkunde, Leipzig, Wilhelm Engelmann, v [illegible]

[17] Helmholtz described his ophthalmoscope at the Physical Society in Berlin in December, 1850. On Nov. 11, 1851, he made his first public announcement before the Society for Scientific Medicine in Königsberg. His booklet appeared in the fall of 1851.

[18] Von Graefe took his M.D. degree in Berlin in 1847; he then spent three years in foreign travel. In 1852 he became privatdozent; in 1854 he began the publication of the Archiv für Ophthalmologie, now in its seventy-eighth year. In 1857 he was made extraordinary professor. In that year (he was then 30 years of age) he announced the discovery of the curative treatment, by iridectomy, of glaucoma; in the same year he called together the first meeting of the Heidelberg Ophthalmological Society. Four years later he developed tuberculosis, but he continued his labors until he died on July 20, 1870.

[19] Mitchell, S. Weir: The Early History of Instrumental Precision in Medicine, New Haven, Tuttle, Morehouse & Taylor, 1892.

The quarter of a century following the introduction of the ophthalmoscope was one of the greatest progress. The influence of von Graefe and his school was rapidly diffused throughout the western world. Archives, journals and monographs bore a large harvest of ophthalmoscopic and other contributions. Many new disease categories were accurately described, their etiology studied and their relations to general diseases and to disorders of other organs established. The relations in particular diseases of the nervous system opened up a new field of knowledge equally significant to the neurologist and the ophthalmologist. Weir Mitchell referred to this period in these words: "Medicine does not grow in an even fashion . . . Today it is surgery which wins; a few years ago it was ophthalmology, which in newly acquired precision and in predictive accuracy and therapeutic gains, set up for us novel standards of exactness and, enriching our symptomatology, cast light in many directions.[19]

The momentum of the third quarter carried over into the fourth. Not only was much in the way of detail added to what had been contributed before, but new lines of investigation were introduced. Chief among those were the bacteriologic. Pathologic histology yielded a rich harvest. New methods of examination were introduced: Skiascopy and the ophthalmometer of Javal proved great aids in the accurate determination of refraction. The ocular muscular relations were subjected to greater study. Antiseptic and aseptic surgical technic was applied in ophthalmic surgery. Local anesthesia was introduced by Koller through his discovery of the anesthetic effect of cocaine, and thus was a return made to general surgery for its gift of general anesthesia. Many advances in other branches of medicine had equally great bearing on ophthalmology. Let a single example suffice: The study of the anatomy of the brain opened up to our knowledge the centers of vision and the course of nerve bundles in the optic nerves and tracts. Advances of notable significance were made in the field of the prevention of blindness; foremost, of course, was that of Credé, the greatest single accomplishment in the prevention of blindness in the entire history of medicine. Ophthalmologists gratefully acknowledge their indebtedness to the noted obstetrician, one of the outstanding benefactors of mankind.

The first third of the twentieth century is almost completed. It has added little in the discovery and description of new disease categories excepting in relation to those associated with the pituitary gland, with vitamin deficiency and nutritional disturbances and with encephalitic diseases that have appeared in recent years. But important advances have been made in the diagnostic and therapeutic use of the x-rays and radium. The successful application of the microscope to the examination of the anterior segment of the eyeball has enabled us to study pathologic changes and processes during life which were formerly only to be observed in the laboratory. Improvements have been made in the ophthalmoscope which have increased the precision of examination, such as the elimination of reflexes, the use of illumination with light of different colors and especially with red free light and with monochromatic light and the correction of spherical and chromatic aberration.

There has been much experimental study bearing on the nutrition of the various parts of the eye, the chemical changes in the intra-ocular fluids, studies which we believe are destined to throw light on those obscure processes leading to the various forms of cataract and glaucoma. The effects of various forms of radiant energy on the eye have been carefully investigated. In many ways research has been directed to solve the many problems which the eye presents, whether considered anatomically, physiologically, embryologically or pathologically.

The introduction of instrumental aids, the spirit of research of great teachers and the extraordinary development of physical and biologic sciences, which gave inspiration to every department of science and medicine, explain the marvelous growth of ophthalmology since the middle of the nineteenth century. The development of ophthalmology as a special science did not separate it further from general medicine and surgery and the underlying branches of medical science, nor even from physics, chemistry and biologic sciences. On the contrary, it bound them closely together. With medicine in general the relation became most intimate, in research and in practice.

It is hardly surprising that a clever critic like Dr. Joseph Collins[22] should express the view: "Very little remains to be discovered in ophthalmology. Its problem is to apply to the eye the discoveries made in the field of general medicine and early to detect some diseases of the vascular and nervous system." Ophthalmologists will appreciate the compliment and pardon the error because Dr. Collins is a neurologist and not an ophthalmologist. We know that methods of examination have reached a high degree of accuracy, but there is not a day when each one of us is not perplexed by problems that we cannot solve: the interpretation of our observations, the analysis of their clinical significance, the discovery of their etiology. It may be satisfactory to some of us to deal with cases in a routine manner, to send our patient to different specialists besides the internist in the hope that they will find something wrong; how few mortals do not have an abundance of physical defects—besides others. How rarely do we have satisfactory evidence, even when our patient recovers from the ocular disease after the "foci of infection" are removed, that there was a causal relation. Is there not much similarity in this confidence to that of our professional grandfathers who found much comfort in their shotgun prescriptions? Do we not sometimes confound therapeutic expediency with established fact? It is well to bear in mind that our aforesaid grandfathers were quite as convinced of

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20. Allbutt, T. C.: Medicine, Encyclopedia Britannica, ed. 11, New York, Encyclopedia Brittanica, Inc., 1910.

21. Clifford Allbutt (footnote 20) illustrated this as follows: " . . . the clinical features of many . . . diseases, such, for example, as that named after Graves, and myxoedema . . . lay as open to the eye of the physicians in the past as to our own . . . the symptoms of tabes dorsalis were distinctive enough, had (they) noted them." To these we may add Hutchinson's triad of signs of inherited syphilis, published in 1863.

22. Collins, Joseph: *The Progress of Medical Specialties During the Past One Hundred Years, in Celebration of the Centennial of the Library of the Medical and Chirurgical Faculty of the State of Maryland*, Baltimore, 1931.

many of their etiologic explanations and therapeutic measures as we are. Should it not be a warning to us to keep well in mind what is theory and what is established fact? We must still remember the lessons of Francis Bacon and guard ourselves against the worship of the idols that lead us to generalizations from insufficient data and those that lead us to error from false philosophies. Let us leave their worship to the practitioners of the "fads". and "kindred delusions" of medical quackery.

We hear much about our "machine age" and the disappointment that instead of relieving human toil and suffering it has in many ways increased them. We ophthalmologists also find ourselves in a machine age, in the era of instruments of precision. A modern ophthalmic consulting room has the appearance of a physical laboratory. But this development has been only of benefit to both patient and physician. It must, however, always be borne in mind that instruments are only aids to observation; observation is useful only when it passes through the mill of careful thought and reflection. Instruments enable us to see; they can neither observe nor think for us.

It would be interesting to follow the development of those institutions and implements which have aided and encouraged the study and diffused the science of ophthalmology, the special professorial chairs in medical colleges and universities, hospitals for ocular diseases, ophthalmologic societies and the ophthalmologic literature, but this is not necessary. We are all familiar with the part they have played.

With every advance of knowledge, new vistas of the unknown open themselves before us. The problems become more and more intricate; they deal with the fundamental processes of nutrition and repair, with the reactions of tissues, cells and protoplasm to the many substances from without and from within the organisms that act on them. Investigations require the aid of general physiologists and pathologists and of biochemists in cooperation with clinicians. It is in the line of natural development that university laboratories and institutes of ophthalmology have been founded in recent years, for only through them can such cooperation in scientific investigation be secured. It is from them that the next great advances in ophthalmology are to be looked for.

Physical Defects in Geniuses.—Most of the great philosophers of history, and a great many of the poets and writers of fantastic tales, have been men and women who have been unable to see the world about them and have compensated by inventing a world of visual images to help them supplement their actual vision. . . . It will repay you to read the lives of eminent artists, poets, philosophers, novelists and astronomers to learn how others, similarly affected, have brought beauty and knowledge and solace into the world. The blind Homer, who gave the world the glories of the Odyssey and the Iliad, is an example of a splendid line of courageous men and women who have not been daunted by their defects, a line that includes Goethe, Spinoza, Goya, Whistler, Braille, Helen Keller and others equally notable. Similarly that deaf giant Beethoven points the way to compensation for defects of hearing. Demosthenes, the stutterer, became the greatest orator of ancient times. Moses, also a stutterer, became a great religious leader. . . . John Hunter, the English physician who first described angina pectoris, died of the disease he discovered and first described. Investigate any genius and you will find that he is compensating for some organic or other defect by intensive training in the compensation of his anomaly in terms of social usefulness.—Wolfe, W. B.: How to Be Happy Though Human, New York, Farrar & Rinehart, 1931.

THE DIET IN BRIGHT'S DISEASE

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The diet which is gaining recognition today as suitable for the patient with Bright's disease is radically different from that of the past. Formerly, in treating this disease, physicians thought only of the kidney; today, in keeping with modern ideas of treatment, the chief consideration is for the patient himself. It was the custom to think only in terms of protein catabolism and of the harmful effects of its end-products, and consequently the patient was told that he must eat no meat. Now attention is directed to the anabolic influences of protein, its upbuilding effects and beneficial influence on repair processes, and the patient is told to take liberal amounts of this essential foodstuff.

The whole protein problem is a much vexed one. Undue emphasis has been laid on the supposedly harmful effects, even in health, of nitrogenous degradation products, while the essential rôle which protein plays in repair processes and in the maintenance of vigor seems to have been largely overlooked. It is not possible here to discuss the mass of testimony, pro and con, which has been obtained from human observation and animal experiment, but it seems fair to say that the weight of evidence would indicate not only that a large protein intake per se is without harm but further that if man would enjoy full health and sustained vigor his consumption of protein food must of necessity be liberal. This applies not only in health but in large measure in disease as well, notably in Bright's disease.

A distinguishing feature of Bright's disease in its acute hemorrhagic and chronic degenerative forms is a marked loss of body protein. The infection which causes acute nephritis, whether it be of scarlet fever or tonsillitis, or some other form of bacterial invasion, produces, first of all, a toxic destruction of body protein; then as the disease progresses there follows a marked loss of albumin through the urine, which entails an excessive drain on the body proteins and results finally in a measurable plasma protein deficit. This deficit in turn profoundly upsets water balance. It was demonstrated years ago by Starling, and more recently illustrated by Christian[1] in his Frank Billings lecture, that water exchange between the capillaries and the tissue spaces is largely controlled on the one hand by the osmotic pressure of the serum proteins and on the other by hydrostatic pressure within the capillaries, and that as the former diminishes through loss of plasma proteins, particularly of serum albumin, this balance is upset and fluid leaves the vessels to accumulate in the tissues. In this manner is produced the edema of Bright's disease.

Not only do these changes in osmotic pressure produce edema but in nephritis, as Van Slyke and his associates have shown, the plasma protein deficit clearly influences the course of the disorder. These clinicians found that if the body proteins of the patient with acute nephritis could be sufficiently protected, the disease would tend toward recovery, but not if an albumin deficit was permitted to continue. They said: "In acute hemorrhagic nephritis the prognosis was found to be independent of the severity of the disturbance during

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[1] Christian, Henry A.: The Mechanism of Edema, J. A. M. A. 97: 296 (Aug. 1) 1931.

the first weeks with the single exception of the plasma albumin content. The majority of cases in which this fell to a low level became chronic."[2] Thus, it would appear that in acute hemorrhagic nephritis the chances for complete recovery depend largely on one's ability to compensate for the protein loss. This can be accomplished in but one way: by permitting a liberal intake of protein, adequate in amount to make good the deficit.

Is there danger that such a ration will, through the end-products of protein degradation, throw a disastrously heavy burden on the sick kidney? Experience has shown that it will not. It should be recalled that deposit protein and that used for the replacement of wear and tear make no demand on the excretory organs and therefore cannot injure the kidneys, and that this fact applies to the larger part of the protein eaten by any person who has suffered from protein shortage. In other words, the increased amount of protein food now recommended for the patient with Bright's disease can have no direct influence on the kidney; it is used entirely for purposes of replacement, and in this manner makes for recovery. Especially significant is the recent report of McCann,[3] who told of a young boy with acute hemorrhagic nephritis whose disease had reached a stationary stage when his protein allowance was increased from 75 Gm. to the very liberal amount of 150 Gm. daily, and who thereupon showed immediate and marked improvement. This change was accompanied by numerous graphic evidences of betterment, such as an increase in the serum proteins and in the carbon dioxide-combining power of the blood, an improvement in the blood urea clearance and a material decrease in the number of red blood cells and casts in the urine. My own experience with acute nephritis has been similar. It appears established that, as a rule, patients with this disease can with relative impunity be given a liberal protein diet, and that such a diet facilitates recovery.

It is difficult to state accurately the amount of protein which should thus be included in the ration of an adult with acute and subacute nephritis. The daily allowance at the present time is usually between 40 and 50 Gm., but judging by my own experience as well as the carefully controlled experiments of McCann and others, one would conclude that approximately three times this amount, that is, 150 Gm. daily, is more nearly correct. The composition of the diet in other respects also is of importance. Since the total quantity of food should be ample to meet the patient's metabolic needs, there should be included, in addition to the protein quota, fats and carbohydrates in amounts sufficient to cover his requirements for energy. For economy in nutrition, carbohydrate should provide at least 50 per cent of the caloric value of the ration, preferably more; only in this way can it be assured that the protein of the food will be used for purposes of repair rather than burned for the production of energy. The type of food chosen, provided these specifications are met, is of little importance, with one exception: The protein should in large part be of high biologic value such as is found in meat, milk and eggs. In general it can be said that if the adult with nephritis takes a quart of milk daily, two eggs and one large serving of meat, his need for protein will be covered and no harm will be done his kidneys.

This need for a liberal protein intake is imperative, not alone in acute nephritis, but in that form of chronic nephritis which has been called degenerative Bright's disease by Addis, and chronic nephritis with edema by Christian, for in this disease also, as a result of the long-continued albuminuria, there is a marked loss of body protein. That the tubular degeneration will tend to continue indefinitely if the loss of body protein is not replaced was indicated by the experiments in Christian's clinic by Barker and Kirk,[4] who were able to study in dogs, by means of plasmapheresis, a condition closely simulating this form of Bright's disease. Whether the edematous disorder described by Epstein[5] under the term nephrosis is a distinct disease entity or is identical with chroni [illegible] Bright's disease is still debatable, but a [illegible] deficit is characteristic of both. For this reason the experience of this clinician with his high protein diets in the former disease is applicable also in the latter. Degenerative Bright's disease can be influenced in no small measure by the liberality of the protein intake.

Conditions of a somewhat different nature obtain in the other type of chronic nephritis, nephrosclerosis. This, in its ultimate nature, is a disease of the arteries rather than of the parenchymatous tissues and, except in the malignant form, its manifestations as well as its outcome depend on circulatory failure rather than on renal incompetency. Van Slyke found in his cases that the plasma protein content was entirely normal; hence the need for protein is not so urgent as in acute hemorrhagic nephritis or in chronic degenerative Bright's disease. On the other hand, except in the terminal stage with its low urea clearance, there is no reason for restricting protein; indeed, there are excellent reasons for providing an amply sufficient intake of this foodstuff. I am sure that much of the anemia and lack of endurance seen in this type of chronic nephritis is due to the unnecessarily rigid dietary restriction to which the patient is so often subjected. This is a disease not of days or weeks, or even of months, but of years and decades, and it is important to prescribe a regimen which will preserve the patient's strength and vigor as long as possible. This can be done only with a diet which carries a liberal supply of good protein.

In conclusion, a more intimate knowledge of the pathology of both acute hemorrhagic nephritis and chronic degenerative Bright's disease would indicate that in both forms of nephropathy the patient should be given diets containing liberal amounts of protein: in the former disease 150 Gm. daily and in the latter even more. Experience has shown that such an allowance facilitates recovery. In nephrosclerosis different conditions obtain, but the diet should be fairly liberal; it should provide approximately 75 Gm. to 100 Gm. of protein daily.

ABSTRACT OF DISCUSSION

Dr. W. B. Penney, Tacoma, Wash.: Dr. McLester has called to our attention a matter that is one of the most important in the ordinary handling of cases of Bright's disease. In our section of the country, it is common to find the nephritic patient either placed on an absolute milk diet or else given nothing but cereal and milk over periods of weeks and months. Ideas concerning the feeding of patients should be carefully reconstructed.

Dr. W. E. Garrey, Nashville, Tenn.: To what extent do nutritional edemas due to lack of proteins act as a contributory factor in the edema of nephritis?

Dr. James S. McLester, Birmingham, Ala.: In answer to Dr. Garrey's question, it would appear that the edema that occurs in the early stage of acute nephritis is complex in its nature and is not well understood, but it seems clear that the edema of the later stages of acute nephritis and that of chronic degenerative nephritis are due to a shortage of protein. Whenever the serum proteins, and particularly serum albumin, are reduced to one half, edema appears.

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[2] Van Slyke, D. D., and others: Observations on Courses of Different Types of Bright's Disease, and on Resultant Changes in Renal Anatomy, Medicine 9: 257 (Sept.) 1930.

[3] McCann, W. S.: The Many Sided Question of Protein in Nephritis, Ann. Int. Med. 5: 579 (Nov.) 1931.

[4] Barker, M. H., and Kirk, E. J.: Experimental Edema (Nephrosis) in Dogs in Relation to the Edema of Renal Origin in Patients, Arch. Int. Med. 45: 319 (March) 1930.

[5] Epstein, A. A.: Further Observations on the Nature and Treatment of Chronic Nephrosis, Am. J. M. Sc. 163: 167, 1922.

THE NEUTROPENIC STATE

ITS SIGNIFICANCE AND THERAPEUTIC RATIONALE

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A growing importance is being attached to the signs and symptoms which have only recently begun to be recognized as associated with a decrease or absence of neutrophilic leukocytes in the peripheral blood. Since the more or less routine counting of the blood cells became a recognized aid in clinical diagnosis, physicians have noted a tendency to leukopenia as a part of certain well known clinical syndromes. Typhoid, influenza, osteomyelitis, tuberculosis, overwhelming infections with the pneumococcus and streptococcus, certain virus diseases, pernicious anemia, aleukemic leukemia, and lymphoblastomas of various types, especially Hodgkin's disease, are, or may all be, characterized by a total white cell count within or below the limits of normal. Various toxic agents—benzene, the arsenicals, mesothorium, trinitrotoluene, x-rays, or the gamma rays of radium—have been found to be the cause not infrequently of profound leukopenia, often with an associated anemia, in individuals exposed to these hazards.

Leukopenia, neutropenia and "agranulocytosis" are, of course, purely descriptive terms, as are leukocytosis, monocytosis and lymphocytosis, and have no etiologic significance; but if in every observation made on the cells of the blood a careful qualitative as well as an accurate proportional differentiation of the formed elements could be recorded, with the variety of technics[1] now available for such studies, far more information than now usually obtains concerning the state of the body defenses and the nature of the pathologic process involved could be brought to bear on the problem presented by a given patient. Moreover, few observers in the past, even though noting coexistent leukopenia in the particular disease under consideration, attributed any of the significant signs or symptoms to this deficiency in white cells. That is to say, leukopenia has always been considered secondary to other factors, and, at most, an unfortunate additional complication in an otherwise generally severe toxemia of nearly, if not quite, lethal proportions.

Roberts and Kracke[2] were among the first to recognize the importance of analyzing accumulated data in terms of white cell level and symptomatology. In a review of the records of 8,000 private clinic patients, one of every four was found to have had a mild granulopenia; one of each two women patients between the ages of 40 and 60 years was neutropenic; and complaints of weakness, exhaustion and fatigue were twice as frequent in the granulopenic individuals as in those showing a normal white cell count. Furthermore, the severity of the symptoms paralleled to a remarkable extent the degree of granulopenia found.

With the recognition by Schultz[3] in 1922 of a rapidly fatal symptom complex designated by him angina agranulocytica, which included progressive oral sepsis of severe grade, marked prostration and a neutropenia in the blood, a new impetus was given to the restudy and analysis of those leukopenic states primarily reflecting a relative and absolute decrease in neutrophilic leukocytes. Friedemann[4] the following year applied the term "agranulocytosis" in a report of similar cases, and Schilling[5] has suggested "malignant neutropenia" as a more fitting descriptive designation. Perry Pepper[6] recently pointed out that "putrid sore throat" probably represents the same condition, as seen and described by the laryngologists of the last century. Most observers, including Schultz, would explain the blood picture in this symptom complex as secondary to a septic or toxic process affecting an aplasia of the myeloid cells in the marrow; i. e., an exceptionally severe manifestation of one of the conditions already mentioned.[6a] Two observations, however, which have been reported in the rapidly increasing literature on this subject, effectively eliminate this hypothesis, at least as the sole explanation for all cases showing these general clinical symptoms and laboratory manifestations: 1. The neutropenia may be periodic and definitely precede the appearance of local signs of infection.[7] 2. Biopsy and postmortem studies are revealing the fact that not in every case of peripheral leukopenia is the bone marrow aplastic for myeloid elements.[8] Thus, Fitz-Hugh and Krumbhaar[8] hypothesize a "maturation arrest" as the fundamental pathologic basis in a portion of these cases and prefer the designation "pernicious leukopenia," which suggests certain analogies between this disease and pernicious anemia. Again is the emphasis placed on neutropenia per se as a sign and not as an etiologic entity, and attention directed toward the importance of differentiating a given "leukopenic state" as to both etiology and underlying bone marrow changes.

It is important in the approach to a consideration of any hypothesis that attempts to explain the mechanism of leukopenia to conceive of the cells of the blood as a tissue, and of those of the bone marrow as constituting an organ[9] with all the potentialities for hypertrophy and atrophy and functional insufficiency that appertain to any other organ or tissue of the body. It has been shown that the bone marrow delivers its cellular products—as vital to the body economy as any hormonal contribution of the ductless glands—in response to an ever-varying functional demand, both the physiologic[10] and the pathologic[11] ranges in cell levels obeying defi-

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Owing to lack of space, several charts have been omitted. The complete article appears in the author's reprints.

[1] Doan, C. A.: Clinical Implications of Experimental Hematology, Medicine **10:** 323 (Sept.) 1931.

[2] Roberts, S. R., and Kracke, R. R.: Agranulocytosis: Report of a Case, J. A. M. A. **95:** 780 (Sept. 13) 1930.

[3] Schultz, Werner: Ueber eigenartige Hulserkrankungen, Deutsche med. Wchnschr. **48:** 1495 (Nov. 3) 1922.

[4] Friedemann, U.: Ueber Angina agranulocytotica, Med. Klin. **19:** 1357 (Oct. 14) 1923.

[5] Schilling, Viktor: The Blood Picture, St. Louis, C. V. Mosby Company, 1929.

[6] Pepper, O. H. P.: History of Agranulocytic Angina, J. A. M. A. **97:** 1100 (Oct. 10) 1931.

[6a] Fried, B. M., and Dameshek, William: Experimental Agranulocytosis, Arch. Int. Med. **49:** 94 (Jan.) 1932. Conner, M. H.; Margolis, H. M.; Birkeland, I. W., and Sharp, J. E.: Agranulocytosis and Hypogranulocytosis, ibid. **49:** 123 (Jan.) 1932.

[7] Roberts, S. R., and Kracke, R. R.: Agranulocytosis, Ann. Int. Med. **5:** 40 (July) 1931. Rutledge, B. H.; Hansen-Pruss, O. C., and Thayer, W. S.: Recurrent Agranulocytosis, Bull. Johns Hopkins Hosp. **46:** 369 (June) 1930.

[8] Dameshek, William, and Ingall, Maurice: Agranulocytosis, Am. J. M. Sc. **181:** 502 (April) 1931. Fitz-Hugh, Thomas, Jr., and Krumbhaar, E. B.: Myeloid Cell Hyperplasia of the Bone Marrow in Agranulocytic Angina, ibid. **183:** 104 (Jan.) 1932.

[9] Doan (footnote 1). Sabin, F. R., and Doan, C. A.: Bone Marrow as an Organ, Proc. Soc. Exper. Biol. & Med. **25:** 121, 1925.

[10] Sabin, F. R.; Cunningham, R. S.; Doan, C. A., and Kindwall, J. A.: The Normal Rhythm of the White Blood Cells, Bull. Johns Hopkins Hosp. **37:** 14 (July) 1925. Shaw, A. F. B.: The Diurnal Tides of Leukocytes of Man, J. Path. & Bact. **30:** 1 (Jan.) 1927.

[11] Doan, C. A., and Zerfas, L. G.: The Rhythmic Range of the White Blood Cells in Human Pathologic Leukopenic and Leukocytic States, J. Exper. Med. **46:** 511 (Sept.) 1927.

nite laws of rhythmic equilibrium or homeostasis.[12] In the normal individual the rhythm of the white cells from hour to hour is in large part a reflection of variation in the polymorphonuclear neutrophils, because they are present proportionately in greatest numbers.[13] The observation by Sabin,[14] in a survey of normal living blood cells, of certain "nonmotile" polymorphonuclear neutrophils, and the later determination[13] of their occurrence in "showers" in the peripheral circulation, suggested to us the hypothesis that the normal stimulus for maintaining the effective "zonal range"[11] of these "defense troops" of the body might be liberated products from disintegrating cells of the same type. This could occur either directly or through the medium of the phagocytic group of cells reducing the débris. The correlation of these "showers of nonmotile leukocytes" in human pathologic conditions with a subsequent increase of young motile neutrophils[11] further supported the concept. This seemed to point to a thorough restudy of the effect of nucleic acid and its derivatives on the leukopoietic system, as these substances must be constantly produced physiologically in the body. The results of that experimental study, begun in 1924, were presented in 1928[15] together with a complete review of the literature on nucleinate therapy up to that time.

On purely empiric grounds, nuclein therapy was suggested, at least as early as 1893,[16] to increase the germicidal power of the blood in diseases of microbic origin. Altmann had isolated nucleic acid for the first time in 1877 from Miescher's "nuclein," obtained from the large residue of nuclear débris constituting the "pus" so readily available from human patients in those days of septic surgery. A little later (1892), Metchnikoff's[17] emphasis on the "phagocytic power" of the polymorphonuclear granulocyte, as the effective means of destroying bacteria, initiated a brief era of intensive cytologic investigation, which, however, was soon overshadowed by the rapidly growing interest in humoral immunity. Thus, the earlier work on the importance to the body of its cellular defenses, to which studies with nucleic acid and its derivatives contributed not an inconsiderable chapter, failed in attaining permanent recognition at that time. It was really necessary for the later physiologic studies on the normal mechanism of leukopoiesis to provide a sound basis for evaluating the effectiveness of agents purporting to stimulate the bone marrow. Now, in the light of modern hematologic studies, it is known that the increase in leukocytes reported and attributed to nucleic acid in the earlier investigations was well within the normal limits of physiologic fluctuation and not of sufficient magnitude probably to influence any pathologic process. Hence, though reports suggesting the effectiveness of nucleinate therapy have continued to appear at intervals,[18] the dosage used was always small: that by Ames and Huntley,[18] from 25 to 45 minims (1.5 to 2.8 cc.) of a 1 per cent solution intravenously in dogs; that by Habetin,[19] 10 cc. of a 5 per cent solution of sodium nucleinate subcutaneously in a wide variety of human cases. Its rationale as a therapeutic agent and the mechanism, if any, invoked by it have remained obscure.

The studies of Doan, Zerfas, Warren and Ames[15] from the Thorndike Laboratory, in Boston, and the Rockefeller Institute, in New York, were directed toward a better understanding of these questions. The definite and usually considerable leukocytosis that followed the intravenous injections of relatively large doses (1 Gm.) of sodium nucleinate in their series of normal rabbits was proved to be unquestionably of bone marrow origin. However, a preliminary leukopenia occurred, sometimes lasting for a number of hours, before the peripheral leukocytosis was observed, an obviously undesirable phase in the reaction. Further studies tended to incriminate the spleen as primarily involved in this temporary withdrawal of granulocytes from the blood stream. Splenectomy eliminated to a large extent the leukopenic period.

It was then determined to see whether this "active principle" affecting the myeloid foci in bone marrow might not be contained in some of the degradation products of nucleic acid, as distinct from the accompanying leukopenia-producing factor of the larger molecule. Henry Jackson, Jr.,[20] was demonstrating the same year from the same laboratory for the first time the existence of pentose nucleotides in normal human blood. The adenine and guanine nucleotides, which he had prepared incident to these studies by the autoclave method of Jones,[21] were generously made available to us for the desired biologic assays. Chemically pure, crystalline adenylic and guanylic acids were later tested through the courtesy and interest of P. A. Levene of the Rockefeller Institute. These products all gave an immediate neutrophilic response without preliminary leukopenia, which recommended them as preferable to the larger nucleinate molecule for clinical use. These experimental studies further revealed the essentially nontoxic character of the nucleotides and suggested the advisability of their use in relatively large dosage when leukocytic stimulation was desired.

Reznikoff[22] made the first clinical application of the implications carried by these experimental studies in four cases of agranulocytic angina, studied in the second Cornell Medical Service at Bellevue Hospital, New York. Three of his patients recovered. Because of the difficulty of securing the nucleotides, he was forced to use the purine bases adenine and guanine.

Jackson and his associates,[23] using first the pentose nucleotides prepared in the Thorndike Laboratory but subsequently directing their preparation on a much larger scale in a commercial laboratory,[24] reported in November, 1931, a series of twenty clinical cases of profound leukopenia, with recovery in fourteen following large doses of nucleotide. This series of cases gave the first real opportunity for studying the effect of adequate dosages of the nucleotides in clinical patients showing profound neutropenia. Our own studies during the past two years have been continued along both experimental and clinical lines as opportunities have been presented.

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[24] The Smith, Kline and French C[illegible] ve supplied us with nucleotide K-96 for our [illegible] studies since they have had the material in p[illegible], during the past two years we have used the adenine sulphate and guanine hydrochloride secured from the Eastman Kodak Laboratories.

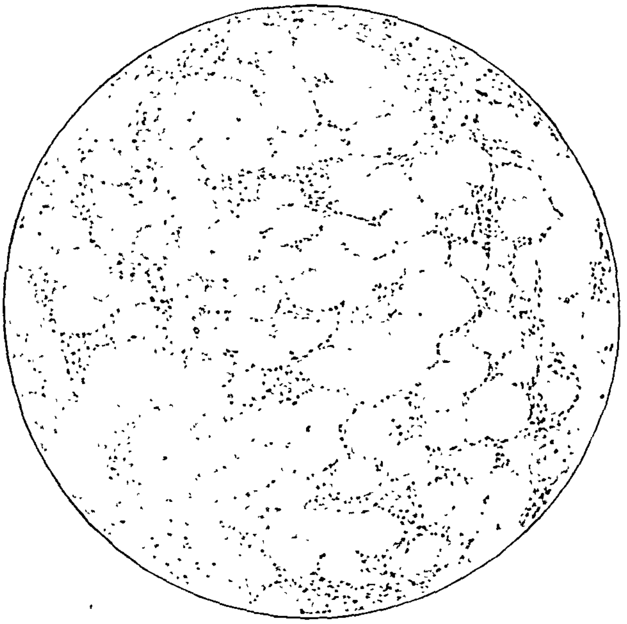

Fig. 1.—Normal bone marrow from proximal end of tibia of rabbit 0-490, removed at biopsy prior to nucleotide injections. There is a predominance of fat cells and sparsely scattered hematopoietic foci; reduced from a photomicrograph with a magnification of 100 diameters.

EXPERIMENTAL STUDIES

Having proved that nucleic acid and its derivatives had a definite effect on the myeloid foci in the bone marrow,[15] we decided to give repeated daily injections of this material to normal rabbits over a prolonged period to determine the capacity of the bone marrow to respond under such circumstances. Could the normal mechanism of maturation and delivery be broken down under such continuous bombardment with the development of an uncontrolled marrow hyperplasia and with the appearance of a leukemic arrhythmia in the blood, or might it be possible to exhaust the ability of the marrow to respond with the gradual development of a relative hypoplasia or aplasia for myeloid elements? Starting with 50 mg. doses, the dosage of sodium nucleinate was gradually increased to 1 Gm. daily given into the ear veins of two rabbits, the period of observation extending for 102 and 116 days, respectively. Throughout this time, granulocytosis without arrhythmia or the appearance of immature forms was maintained in the peripheral blood. At autopsy, the bone marrow showed definite myeloid hyperplasia but with no apparent damage to the integrity of the organ. Marked bilateral hypertrophy of the kidneys and splenomegaly were found in both rabbits. On microscopic examination, ectopic foci of myelocytes were seen scattered throughout both of these organs as evidence of the specificity of the stimulus for myeloid proliferation contained in the nucleinate molecule.[25]

Immediately on receiving our first consignment of nucleotide K-96 from Smith, Kline and French, we instituted a series of rabbit injections to test the toxicity and potency of this material in the light of our previous experimental studies. Previous to the injections and during the control period, bone marrow was removed from the proximal end of the tibia in each rabbit (fig. 1). For five days 0.35 Gm. was injected intravenously, daily or twice daily, without evidence of the slightest constitutional reaction on the part of the animals at any time. Temperatures and weights remained normal. Figure 2 is the tibial bone marrow from the side opposite that shown in figure 1 at the end of this period in rabbit 0-490. The myeloid hyperplasia is striking and represents the basis for the granulocytosis that was observed in the peripheral circulation.

Rabbit 87 was permitted to survive eight weeks. Figure 3 presents the blood changes during this time and shows the increase in granulocytes during the period of injection, with a gradual return to the preinjection level in the succeeding seven weeks. At autopsy there was some evidence of myeloid hyperplasia still remaining in the marrow of the long bones, but nothing else abnormal was revealed by microscopic study.

These rabbits received, in all, 3.7 Gm. of nucleotide K-96, which on the basis of relative weights would be the equivalent of from 300 to 450 Gm. in an adult weighing 150 pounds (68 Kg.). The average effective dosage of nucleotide K-96 in human cases of malignant neutropenia has been from 4 to 6 Gm. in our experience to date.

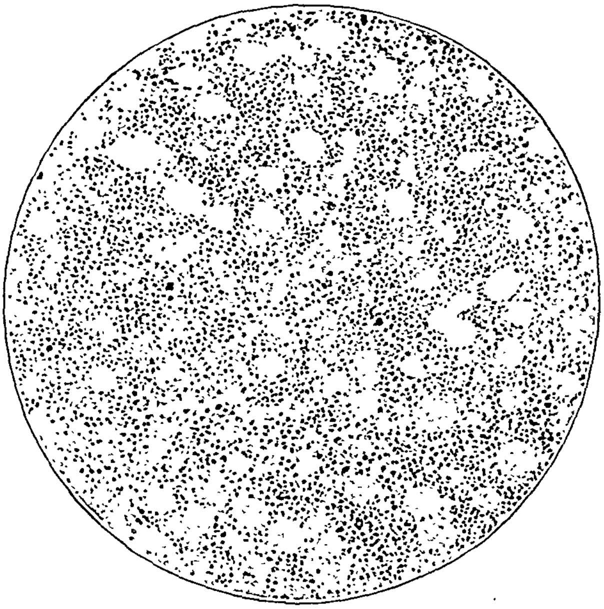

Fig. 2.—Marrow from the proximal end of the opposite tibia of rabbit 0-490, immediately following a series of five daily intravenous injections of nucleotide, of 0.35 Gm. each. The myeloid hyperplasia developed in the five-day interim at the expense of the original fat deposits; reduced from a photomicrograph with a magnification of 100 diameters.

Thus the experimental studies on normal rabbits justify three conclusions: 1. Nucleic acid and its degradation products exert a chemotactic effect on normal myeloid foci with a prompt effective increase in the delivery of granular leukocytes to the peripheral circulation under a controlled physiologic or rhythmic mechanism. 2. Repeated large intravenous injections tend neither to exhaust nor to cause a malignant hyperplasia of the myeloid elements in normal animals. 3. A *short course of injections stimulates a myeloid hyperplasia of normal marrow without otherwise injurious consequences, which is reflected by a relative and absolute increase in the amphophilic granulocytes in the blood stream of rabbits.*

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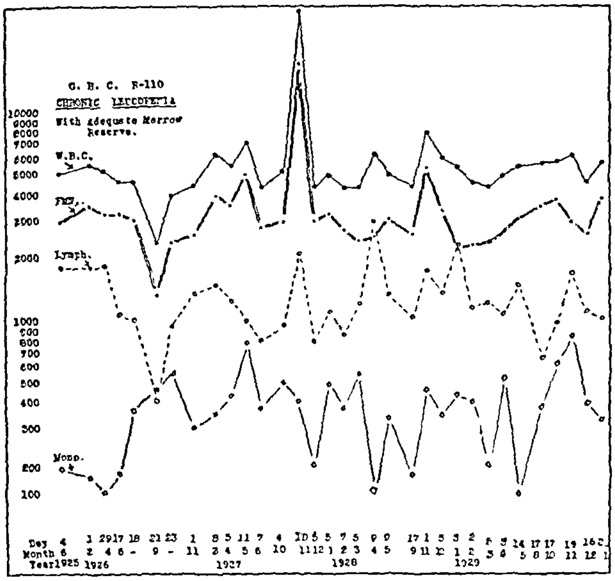

Fig. 4 (case 1).—Cellular response during five-year period of observation of G. H. C., a white man, aged 25, who had chronic leukopenia with adequate marrow reserve. An effective response when needed always occurred. Frequently the total white count was under 5,000.

CLINICAL STUDIES

Chronic Neutropenia.—As observed in the clinic, the idiopathic neutropenic state may be either acute or chronic. In those individuals presenting the more chronic condition, the symptoms are vague, and very few signs other than the leukopenia itself are present. The white cells may remain consistently well below 4,000, or there may be periodic fluctuations between a perfectly normal count and a more or less severe leukopenia.

It is important to differentiate further in this group of chronic leukopenic patients. In some, a count regularly totaling between 2,500 and 5,000 white blood cells does not seem to be incompatible with perfect health, and, whenever any intercurrent pyogenic infection intervenes, a leukocytosis develops promptly and no inadequacy in the response of the cellular defense forces of the body is apparent (fig. 4, case 1). Both quantitative and qualitative relationships within the white cells are normal, and the rhythm of delivery is normal. In such individuals, a perfectly satisfactory and efficient cellular equilibrium or homeostasis is established, except that it operates at a level somewhat below that found in the majority of normal adults. In this category of patients with an absolute decrease in neutrophils but showing a normal leukocytic response to infection may be placed those rare individuals who show a reversal of the neutrophil-eosinophil ratio in the blood; for during infection the eosinophils are replaced by a neutrophilic leukocytosis, proving that the eosinophil in such instances does not take over the function of the neutrophil.

In the second group of patients who show a chronic leukopenia of approximately similar grade, there is apt to be somewhat less of the normal feeling of well being. There is usually some loss of energy, an increased ease of fatigability, a relative lymphocytosis, and an absolute neutropenia with a mild "shift to the left" but no myelocytes present. In these patients any demand over and above that represented by the physiologic needs of the healthy body results in a more severe leukopenia rather than in a compensatory leukocytosis. Figure 5 (case 2) visualizes the blood changes in such an individual as followed over a forty-three day period. On March 13 the patient complained of sore throat and a severe headache and showed a fever of 102 F. His white blood count rose to 6,000 and the neutrophils, which had been ranging for the most part well under 2,000 per cubic millimeter, went to 3,600. The following day the patient's chief complaints were extreme weakness, prostration and fatigue. The granulocytes were found on four separate occasions throughout this day to be less than 200 per cubic millimeter. They numbered approximately 400 on the following day and reached the 1,000 per cubic millimeter level after another twenty-four hours in a spontaneous recovery. A few days later, 500 mg. of adenine sulphate in 20 cc. of sterile distilled water was injected slowly into the arm vein with a transitory response on the part of the granulocytes comparable to that previously observed in the presence of infection. When first seen, this patient was recovering spontaneously from a slight infection and the gradual trend upward of the neutrophils is seen at the left of the chart. In this patient any unusual stimulus or demand calls on a marrow with an exceedingly low reserve of myelocytes with which to respond; a relatively minor infection may thus precipitate a further state of lowered resistance and represents, therefore, a primary rather than a secondary factor in the production of the neutropenia. Such patients studied by the epinephrine test and by single injections of nucleotide present a bone marrow capable of definite but minimal responses with imminent possibilities of grave insufficiency. They have been advised to continue their normal activities but with instructions as to diet and general hygienic measures and have been warned to take unusual precautions when even minor pathologic conditions intervene. Such cases have been

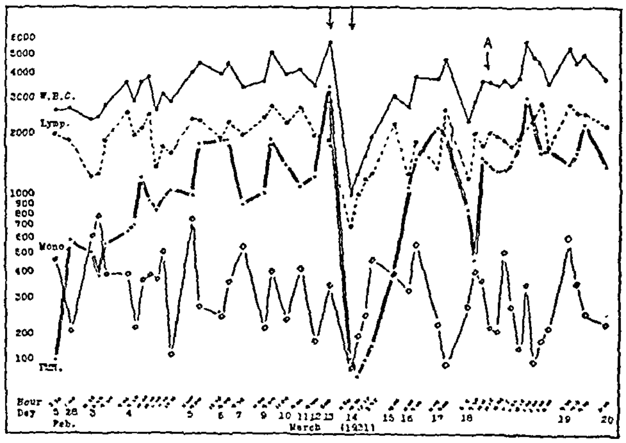

Fig. 5 (case 2).—Chronic neutropenia with low marrow reserve, in W. A. P., a white man, aged 32, Repeated tendency to marked neutropenia, checked by repeated determinations when found, following any unusual demand for granulocytes. Compare the marrow response to a natural infection (March 13) with marrow exhaustion following, and that observed after the intravenous injection of adenine sulphate (*A*, March 18) *without evidence of marrow failure. In this type of case nucleotide may be useful in tiding the individual over his temporary insufficiencies.*

followed during the past two years and have shown no tendency as yet to further progressive decompensation of the marrow.

Chronic regularly recurring periodic neutropenia associated with a cyclic alternation in certain aspects of the physical status presents still another problem. Figure 6 (case 3) records one segment of a study extending over more than a year in a woman, aged 18. There recurs in this patient on the average of every twenty to twenty-one days a relative and absolute neutropenia of severe grade, unaccompanied by the appearance of immature cells in the blood and uninfluenced by the administration of pentose nucleotides. The phenomenon is probably not of bone marrow origin. Certain similarities exist between this case and the only other recorded case in the medical literature at all comparable, that reported by Rutledge, Hansen and Thayer in 1930, though there are many dissimilarities. Further details of this case will be presented in a future communication. It will suffice here to illustrate another type of the neutropenic state—in this instance a recurrent neutropenic habitus.

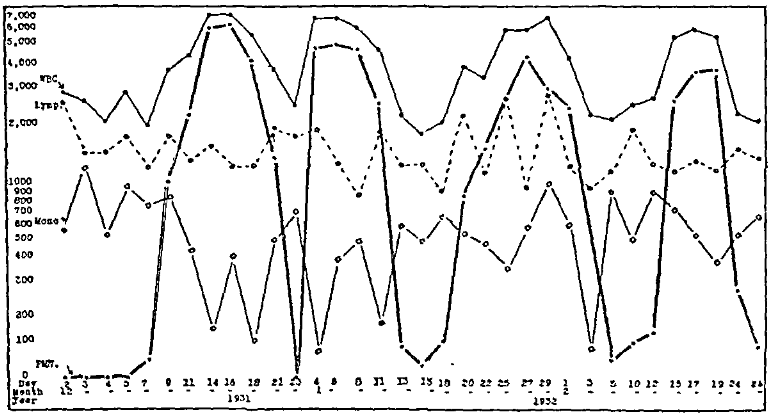

Fig. 6 (case 3).—Chronic recurring neutropenia in P. D., a white girl, aged 18 years: The low points in this rhythmic neutropenia recur regularly every twenty-one to twenty-three days. The tendency to monocytic compensation at these times is shown. This cycle is unassociated with the menstrual history. Certain relatively minor, nonincapacitating physical phenomena accompany these changes in the blood cells, which are not accompanied by the appearance of any immature forms and are not influenced by nucleotide injections.

Malignant Neutropenia.—It is, however, the acute condition, essentially the syndrome described by Schultz,[3] with its sudden onset and rapid course, which presents the dramatic challenge to the physician for immediate recognition and effective therapy. This symptom complex may be separated from other leukopenic states: (1) by a carefully taken history which may reveal vague symptoms of fatigue and weakness preceding any signs of infection, thus marking the neutropenia as primary; (2) by the rapid malignant spread of what would ordinarily prove to be a minor infection of the mouth; (3) by the severity of the general prostration and malaise and by a degree of apprehension out of all proportion to the extent or duration of infection or of the pathogenicity of the organisms found (Bacillus subtilis, Vincent's bacilli and spirilla, B. pyocyaneus); and (4) perhaps by the therapeutic test described hereafter.

As has been previously stated, the bone marrow may be either hyperplastic or relatively aplastic for myeloid elements in patients presenting in common the syndrome just described. The following case reports well illustrate these differences in pathologic changes in bone marrow which may underlie the neutropenia and which careful qualitative studies of the cells in the blood will reflect:

Case 4.—W. W., a woman, aged 36, night supervisor of nurses at the University Hospital, had a tooth extracted, November 20. Three days later there developed generalized aching over the entire body with severe frontal and occipital headache. At the same time the patient noted a slight sore throat; on examination diffuse hyperemia, but no exudate or membrane, was found. There was marked local inflammation at the site of the extraction. The next day the patient showed marked general constitutional prostration, nausea, vomiting, slight epistaxis, a temperature of 101 F. and a pulse rate of 120 and was admitted to the hospital; there were no chills. The white count on admission was 1,500, with 22 per cent neutrophilic leukocytes. Blood and throat cultures yielded only B. subtilis. Interestingly enough, the patient a year previously had shown the same organism in pure culture associated with a severe throat and tonsillar infection.

November 27, 16 per cent of 2,000 white blood cells were neutrophils. On the 28th, with a total count of 1,400 leukocytes, only 2 per cent of which were normal granulocytes, the first intramuscular injection of 0.7 Gm. of pentose nucleotide K-96 was given. On the five succeeding days, similar dosages were administered. Within twenty-four hours of the first injection there was a sharp rise in the absolute number of granulocytes from 100 to 1,000 per cubic millimeter. During the two succeeding days the count remained at this approximate level, then started rising again, and maintained a steady gain until the high point of 11,000 total count with something over 6,000 polymorphonuclear leukocytes was reached on the thirty-second day after treatment was instituted. Thereafter the count returned to normal. The hemoglobin remained between 11 and 12 Gm. per hundred cubic centimeters of blood throughout and the erythrocytes between 4 and 5 million. The blood platelets were never deficient (from 150,000 to 400,000). The lymphocytes during the first six days were between 1,000 and 2,000 per cubic millimeter; thereafter between 2,000 and 3,500. The monocytes remained well within their limits of normal at all times. It will be seen from the graphic

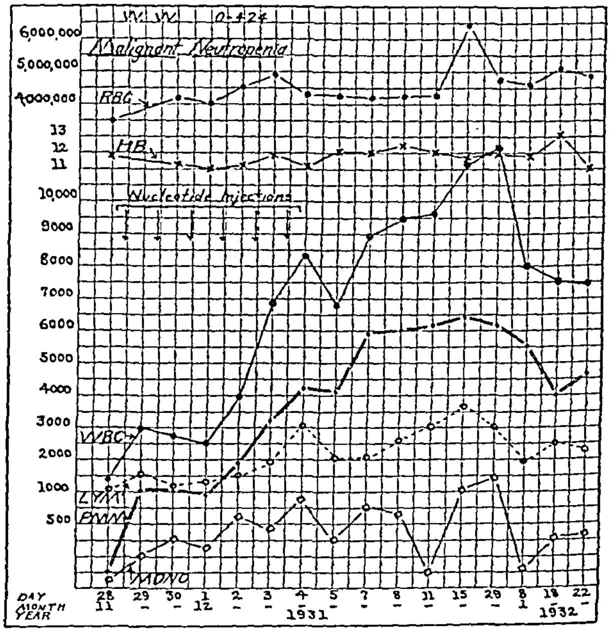

Fig. 7 (case 4).—The prompt rise in polymorphonuclear leukocytes beginning within twenty-four hours of the first injection of neucleotide is shown. An overcompensatory neutrophilia preceded the return to a normal level.

representation of the blood examinations in this case in figure 7 that we were here dealing primarily with a leukopenia involving chiefly the neutrophils and that the recovery increases in neutrophils and total white cells paralleled each other strikingly. No immature myeloid cells earlier than the myelocyte C were encountered in any of the differential studies. Figure 8 represents the percentage of myelocytes charted against the total granulocytes, and figure 9 the Arneth differential count in somewhat more detail. Figure 10 records the temperature, pulse and respiration during the period of hospitalization. The study may be interpreted as reflecting the reestablishment of the normal delivery of granulocytes to the blood and tissues from a bone marrow which still contained many myeloid foci, even when the leukopenia was greatest in the peripheral blood.

CASE 5.[26]—H. B., a physician, aged 52, one week previous to entering the hospital and during a period of malaise and marked subjective fatigue developed gingivitis accompanied by severe pain. In the hope of possible relief, one lower incisor and one lower molar were extracted. Severe prostration and an increasingly severe gingivitis, especially marked about the extraction areas, immediately confined the patient to his home and bed. Fever fluctuated between 99 and 103 F. When seen by an otolaryngologist, a tentative diagnosis of acute leukemia was made because of the extent and character of the mouth lesions and the general appearance of the patient. Immediate removal to the hospital for differential diagnosis and treatment was ordered.

The first blood studies revealed: white blood cells, 1,000; red blood cells, 3,860,000; hemoglobin, 10.6 Gm. per hundred cubic centimeters of blood; platelets, 90,000. The differential count revealed 4 per cent toxic granule neutrophils, 4 per cent myelocytes A, and 92 per cent lymphocytes. No monocytes were seen. No blood cultures made at this time or later during the illness showed any bacterial growth. One ampule of pentose nucleotide K-96 (0.7 Gm.) was immediately administered intramuscularly. The course of the recovery is revealed in the studies of the cells of the blood. Twenty-four hours following the first nucleotide injection there was definite improvement in the subjective reaction of the patient. The extreme apprehension was subsiding; he was resting better, was sleeping fitfully, and afterward described his sensations at this time as of the resumption of internal physiologic activities which had seemed temporarily suspended. Because of the severity of the clinical condition, 1.4 Gm. of nucleotide in two divided doses was given daily during the first seventy-two hours following admission to the hospital. A sharp but small rise in the granulocytes occurred promptly (fig. 11), from 100 to 500 cells per cubic millimeter. For the succeeding five days the myeloid cells mounted gradually from 500 to 1,000 per cubic millimeter, an almost imperceptible increment but important in that there was no actual loss of ground on any day, and the qualitative changes to be mentioned later were of reassuring prognostic significance in these days of the beginning recovery. Even though the total count and granulocyte level per se were far from satisfactory at the end of the sixth day of nucleotide treatment, other considerations made it seem safe and advisable to suspend injections and to resume treatment only if the favorable trend of events should cease abruptly, which did not happen. Objective as well as subjective clinical improvement continued uninterruptedly to complete recovery during the succeeding days and weeks.

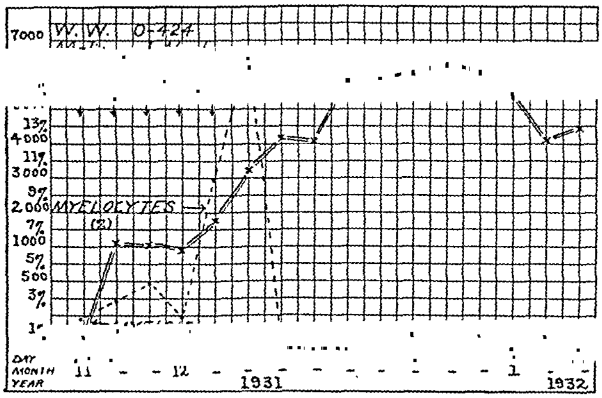

Fig. 8.—Malignant neutropenia in case 4: The renewed activity of the bone marrow is reflected in the transitory increase of myelocytes in the peripheral circulation quite as much as in the rising total count. The peak, 17 per cent, was reached on the fifth day after the first nucleotide injection. No cells younger than myelocyte C were encountered at any time in this patient.

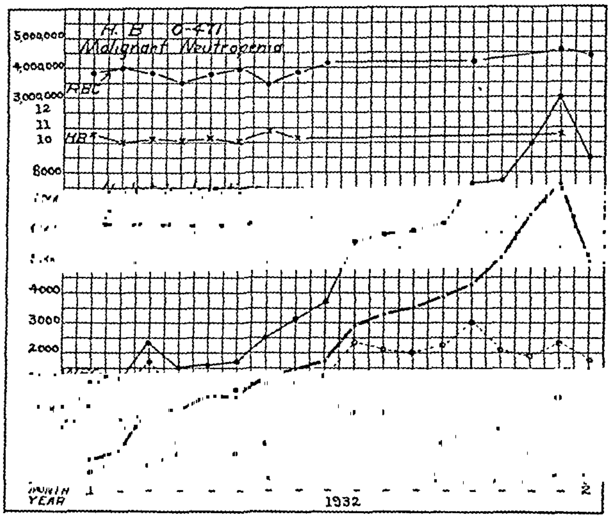

Fig. 11 (case 5).—Within forty-eight hours of the first nucleotide injection, a slight but definite gain in the neutrophilic cells was noted. A gradual but steady recovery ensued; no relapse has occurred during the past five months.

Figure 12 has been constructed on a percentage scale to visualize the changing proportional relationships of granulocytes, lymphocytes and monocytes during the course of the disease. From a predominance of 92 per cent lymphocytes, with only 8 per cent myeloid cells on January 7, a gradual resumption of the normal 75:21:4 ratio of February 3 was observed.

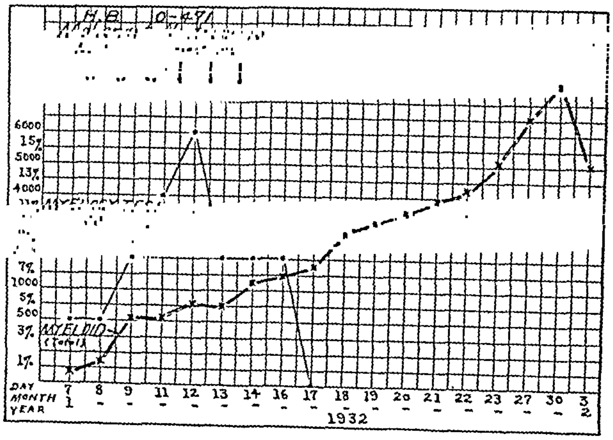

Fig. 13 (case 5).—Coincident with the first increase in total neutrophils, and reflecting even more reassuringly a reawakening of marrow activity, was the percentage increase in early myelocytic forms. With 8 per cent at forty-eight hours following the first nucleotide injection, the high point of 16 per cent was reached on the fifth day, myelocytes being present in the circulation until the tenth day following the institution of treatment. The chart was made from supravital data.

It has been mentioned that certain qualitative studies of the myeloid cells during the period of recovery foretold the course of events more promptly than did either the absolute or the percentage increase in granulocytes. Figures 13 and 14 visualize these data.

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[26] This patient was studied and treated in cooperation with Drs. J. J. Coons, J. H. Warren and C. H. Hoffhine. I am also indebted to Mr. H. C. Johnson for assistance in securing some of the blood samples.

The first (fig. 13) shows the varying percentage of immature myelocytes of all ages, charted against the total number of myeloid elements. The result strongly suggests the now familiar curve of reticulocytes and total erythrocytes indicative of bone marrow response to liver or iron therapy in the anemias, even to the plateau in the middle of the descent from the high point for young cells. It will be noted that the peak (16 per cent) of new young myeloid cells in the circulation was reached on the fifth day after treatment was begun, and that all immature forms younger than the "band form" of Schilling had entirely disappeared by the tenth day; and yet, the total granulocytes were less than 800 on the fifth and still under 1,500 per cubic millimeter on the tenth day.

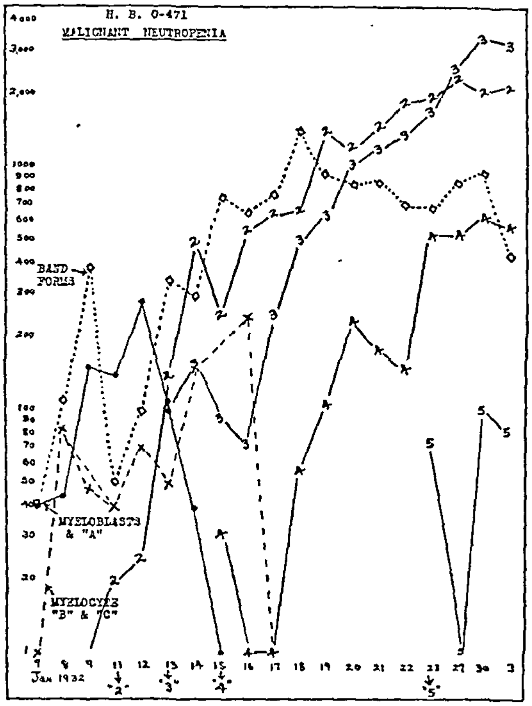

Fig. 14 (case 5).—The sequence of events as the earliest cells of the myeloid series appear, only to be supplanted each in turn by succeeding generations of more mature cells unfolds the life cycle of the neutrophilic myelocyte and leukocyte quite as completely as it is revealed in histologic studies of regenerating bone marrow. The data were taken from both supravital and fixed film differentials.

Figure 14 presents the same analysis in more detail. Myeloblasts or myelocytes A, identified largely by cytoplasmic criteria,[27] were present at the first blood examination and reflected the depletion of the more mature myelocytic reserves with a resultant hypoplasia of extreme degree. They are charted together, as are myelocytes B and C to reduce the number of lines in this graph. The myeloblasts and the earliest myelocytes increased to their highest point, 280 per cubic millimeter on the fifth day of treatment, and disappeared on the eighth. Myelocytes B and C, those containing a more complete complement of specific granules in their cytoplasm, appeared at the end of the first twenty-four hours, reached a high point of 250 on the ninth day, and dropped out of the picture on the following day. The "band forms" of Schilling, the earliest of the motile granulocytes, as evidenced both by the nonsegmented nucleus and by the heavier myelocytic staining of the specific granules, were present to the number of 40 per cubic millimeter on the first examination. They were present in all preparations at all times but reached the maximum (1,400) on the eleventh day and thereafter gradually decreased to resume their proper proportionate representation in the count as equilibrium was again established. The first granulocyte with a segmented nucleus, two lobes, was not observed in the circulation until the fourth day, but thereafter these two-lobed neutrophils increased rapidly until the twentieth day, when for the first time those cells with three lobes surpassed them in total number. These slightly older granulocytes, as judged by the lobing of their nuclei, had appeared for the first time on the sixth day; one cell with four lobes to the nucleus was seen in one preparation two days thereafter, but not until the eleventh day had they come to stay. Five days later, on the sixteenth day after treatment was begun, granulocytes showing five nuclear segments appeared, at which time there were something over 5,000 granulocytes per cubic millimeter in the peripheral circulation and the patient was well along on his way to convalescence (fig. 15). Thus, the story of the origin, maturation and delivery of the neutrophilic leukocytes from myeloblast through the various myelocytic stages in bone marrow to the fully mature, motile, functionally efficient definitive unit of the circulation has been followed and the time relationships for each stage established, at least for this individual under the circumstances of his particular heredity and environment. From myeloblast to five-lobed polymorphonuclear leukocyte probably requires approximately two weeks' time according to the deductions from this particular case. When the bone marrow is thrown back to the myeloblastic level or still further, it is quite as possible to follow from the cells in the peripheral circulation the various steps in its regenerative response toward the resumption of normal function as in the case of megaloblastic or erythroblastic marrow. In this instance, whether specifically the result of nucleotide stimulation or as a coincidental spontaneous regeneration, I feel confident that because of the slowness of the return to a normal total count and the character of the early cellular response we were dealing with a relatively hypoplastic marrow as far as myeloid foci were concerned and that recovery occurred from such a state.

Case 6.—M. H., a woman, aged 25, having malignant neutropenia similar in symptomatology and clinical course to the cases already described, responded promptly to nucleotide therapy with complete recovery.

Case 7.—J. A. Z., a physician's wife, aged 33, was seen with an acute otitis media, but with general prostration and malaise out of all proportion to the localized nature of the infection. Nine months previously she had had a similar infection of the middle ear with a low total white count. Recovery was spontaneous after local treatment of the otitis. When seen at the present illness, a recurrence of the neutropenic condition was suspected and verified. The total leukocyte count was between 2,500 and 2,800, with the majority of the cells lympho-

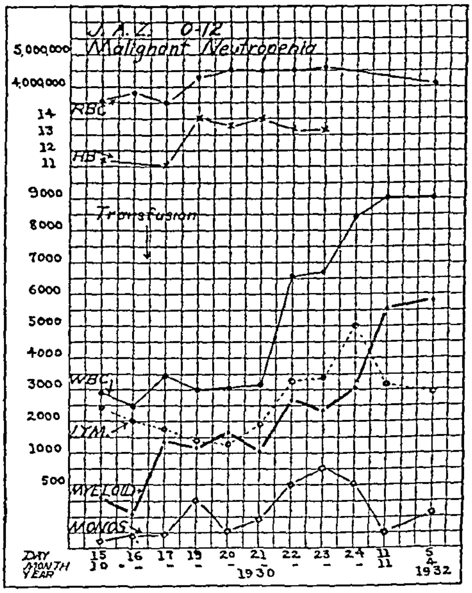

Fig. 16.—Malignant neutropenia in case 7: The transfusion of 500 cc. of whole blood initiated a train of events in this patient strikingly similar to those previously recorded following nucleotide therapy.

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27. Sabin, F. R.; Austrian, C. R.; Cunningham, R. S., and Doan, C. A.: Studies in Subacute Myeloblastic Leukemia, J. Exper. Med. **40**: 845 (Dec.) 1924.

cytes (fig. 16). Less than 500 granulocytes were found, but those which were present were mature forms. Monocytes and lymphocytes were present in normal numbers. Red blood cells, hemoglobin and blood platelets were not remarkable. The normal lymphocytes and the presence of mature leukocytes were good prognostic signs, and the latter suggested that there were myeloid foci still remaining in the bone marrow but for some reason the cells were not maturing and being delivered as needed. Blood transfusion was advised, no nucleotide being available at the moment. The similarity of the sharp rise in granulocytes twenty-four hours following the direct transfusion of 500 cc. of blood to that observed in the two preceding cases following the institution of nucleotide therapy suggests a similar effect on the myeloid mechanism in the bone marrow (fig. 17). Following the small but definite initial recovery of neutrophils, the total number of granulocytes remained slightly above 1,000 per cubic millimeter for the next three days, when a new level around 2,500 was attained and thereafter convalescence proceeded without complications. There has been no recurrence of the condition during the past eighteen months up to the present writing.

COMMENT

Many therapeutic measures have been suggested and tried in an attempt to prevent the rapidly fatal termination that has attended and threatens to attend the individual deprived for any appreciable length of time of his chief cellular defense mechanism, the neutrophilic leukocyte. Because of the obscure etiology and widely varying basic pathology in the group of cases presenting this syndrome, empiricism rather than therapeutic rationale has governed in most of the suggested treatments. The majority of the measures instituted have apparently been of little curative value.

The three measures that have seemed to give the best promise as judged by clinical reports are irradiation, blood transfusion or some form of nucleic acid. This being true, it is reasonable to inquire into the possible explanation for the reported benefits derived from such widely divergent therapeutic procedures. Are spontaneous recoveries being confused with supposed therapeutic victories? The high mortality reported in the untreated cases presenting the symptom complex of malignant neutropenia and the occurrence of such fatal cases in this community during the period covered by the present studies speaks against a frequent spontaneous recovery, though doubtless such recoveries do occur. If, then, these measures really help, how does each one work to accomplish the ultimate therapeutic ideal of physiologic specificity?

The reasoning based on experimental and clinical data by which the degradation products of senile and disintegrating cells are seen as an integral part of the normal mechanism for maintaining cellular equilibrium has been presented in the earlier part of this paper. Theoretically, at least, therefore, in those cases presenting an etiology essentially intrinsic and related to an insufficiency of the myelopoietic function of bone marrow, the more rational treatment should be the supplying to the body of a concentrated preparation of the active principle affecting directly the myeloid centers. One should expect a higher percentage of recoveries in properly diagnosed cases from this therapy than from less direct measures, as shown in the accompanying table. There would seem to be no rationale for the use of the nucleotides in leukemia[28] on the basis of present experimental knowledge.

In the normal individual these nucleotide products are present in minimal quantities in the circulating blood.[20] In addition, the neutrophilic leukocytes which are in the circulation will yield nucleic acid on disintegration. Thus, when the blood from a normal donor is transfused into a recipient with peripheral neutropenia but with a fairly normal myelocytic content in the marrow, it frequently must carry a sufficient additional increment of the active principle to restore the normal mechanism of cell delivery once again. In such instances blood transfusion really initiates recovery and is a rational therapeutic procedure. Its one drawback is the small concentration of effective stimulus per unit volume of blood, which in the more severe grades of myeloid hypoplasia may prove insufficient in the emergency.

There is some difference of opinion as to the primary effect of minimal exposure to x-rays or radium. That many tissues and especially the hematopoietic tissues are highly radiosensitive and may be inadvertently destroyed by a variable exposure to such active rays, particularly in individuals of a more readily susceptible constitution, makes of this therapeutic measure a two edged sword to be wielded with great caution when stimulation rather than destruction is the end desired. Granting that there is a stimulatory threshold below which a primary destruction of cells does not precede regeneration,[29] this must vary considerably from individual to individual and hardly yet be susceptible of recognition and control by the roentgenologist, especially when tissue within the bony confines of the skeleton is to be affected. In patients with malignant neutropenia but in whom the marrow is hyperplastic and shows only a maturation arrest, the mechanism by which a response is obtained may well be that of a primary destruction of some of the intact myeloid foci with a liberation of autogenous nucleotide, which then could initiate the maturation and delivery of leukocytes from the remaining myeloid foci. The fact that a number of the cases treated by repeated 1/20 erythema doses of x-rays over the long bones have shown a prompt response in the peripheral blood only to be quickly followed by a relapse which proved rapidly fatal in the face of all therapy, including a second series of x-ray treatments,[30] seems to illustrate the effect of a potentially destructive agent when a marked grade of myeloid hypoplasia exists as a basis for the neutropenia. A complete aplasia may be precipitated under such circumstances. On the other hand, the explanation for the fatal recurrence in such cases may be simply the development of a complete decompensation of the organ following the last heroic effort to respond to stimuli ordinarily effective in initiating and maintaining myelopoiesis. Thus, it may well be that a common mechanism is invoked by each of the three therapeutic measures mentioned when recoveries follow their use, even though at first glance they appear to be dissimilar.

Mortality Statistics of Malignant Neutropenia

Therapy	Cases	Deaths	Mortality, per Cent
Untreated	Many	..	90+
Miscellaneous therapeutic measures	178	133	74
	33	24	72
	53	34	64
	64	34	53
	44	11	25

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[28] Jackson, Henry, Jr.; Parker, Frederic, Jr.; Robb, G. P., and Curtis, Helen: A Case of Acute Leukemia with a Five-Months' Remission, Folia haemat. **44**: 30 (April) 1931.

[29] Nakahara, W.: Changes in the Lymphoid Organs After Small Doses of X-Rays, J. Exper. Med. **29**: 83 (Jan.) 1919.

[30] Taussig, A. E., and Schnoebelen, P. C.: Roentgen Treatment of Agranulocytosis, J. A. M. A. **97**: 1757 (Dec. 12) 1931.

It is obviously premature to attempt any final statistical appraisal of the relative merits of the respective therapeutic measures under discussion. However, taking the summary of figures published in December, 1931, by Taussig and Schnoebelen[30] and adding thereto the series of patients thus far treated with nucleotide by Reznikoff,[22] Jackson[31] and associates, and myself, the relative proportion of successes to date shown in the table, is suggestive in supporting the hypothesis here advanced as to the mechanism that may underlie the action of each. If nucleotide is a specific stimulus to myelopoiesis, then when such stimulation is either lacking in the body or insufficient because of other destructive forces the most effective therapeutic rationale should include its attempted replacement in concentrated form.

In addition to the measures directed toward the stimulation of a waning or failing granulopoietic bone marrow, too much emphasis cannot be placed on the special attention which should be given to any foci of infection that may be present. The mouth and throat are more usually affected, when the neutrophilic leukocytes become so few in number as to permit the multiplication of the fusiform bacilli and spirilla of Vincent's and the invasion of the mucous membranes by the ordinary bacterial flora of this region. Meticulous care several times each day in the local treatment of these oropharyngeal lesions by a competent specialist reduces the dangers of blood stream invasion during this period of low resistance. Apical abscess, otitis media, rectal abscess and infected sinuses have made up a part of the syndrome in some of these cases and, whenever present, each of these complicating conditions should be considered with more than the usual care and all available local measures to limit their activity, and progressive development should be vigorously prosecuted.

CONCLUSIONS

1. The neutropenic state may be chronic or acute, constant, recurrent or nonrecurrent. In diagnosis it must be sharply differentiated from the leukopenia associated with many other clinical syndromes.
2. The chronic condition of moderate leukopenia may either mean a normal physiologic equilibrium maintained at a level somewhat lower than the average, with no detectable influence on the normal health of the individual, or it may reflect a low myelocytic reserve in the marrow with constant potential danger of marrow insufficiency and decompensation.
3. The acute or malignant neutropenic state presents a crisis that is rapidly fatal if recovery of marrow function is not initiated promptly. The underlying pathologic condition may include myeloid hypoplasia or hyperplasia.
4. Experimental and clinical observations form the basis for attributing to nucleic acid and to the nucleotides chemotactic, maturative and initiatory stimuli for neutrophilic myelocytes when the basic mesenchymal tissues from which they arise are in a condition to respond.
5. Blood transfusion and irradiation may act through the same nucleotide mechanism, when effective. The latter, because of its potentially destructive affinity for hematopoietic tissues, must be used with great caution when stimulation is desired. Further experimental studies are needed to ascertain whether the x-rays may be really primarily stimulatory to myeloid tissue without a preceding destructive phase.

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31. Jackson, Henry, Jr.: Personal communication to the author.

CHRONIC SEVERE ASTHMA

A STUDY OF A GROUP OF CASES REQUIRING HOSPITAL TREATMENT

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In 1930 and 1931, 132 patients were admitted to the Massachusetts General Hospital because their asthma was severe enough to demand treatment in the wards. They were all difficult cases. Among these patients was a group of twenty-five patients with chronic severe asthma peculiarly resistant to treatment, on whom several observations have been made. Before discussing these cases, however, it is necessary to show the relation of this group to the other types of asthma.

Clinical Characteristics in One Hundred and Thirty-Two Asthma Cases in the Hospital

		Number of Cases	Average Age		Criteria of Allergy (Percentage of Incidence)				Relieved in Hospital
			Onset	Present	Family History	Other Allergy	Skin Test	Eosinophilia	
Extrinsic		46	19	32	67	83	75	65	44
Intrinsic	Attacks	17	32	39	55	14	20	46	7
	Severe	25	38	45	80	66	26	73	0
	Emphysema	13	41	54	0	75	25	40	3
	Cardiac	19	55	59	71	66	38	40	4
Miscellaneous		12	25	36	50	33	58	66	3
Total		132	30	42	65	69	52	57	61

The accompanying table shows the clinical characteristics of all the patients and the groups into which they fall. Extrinsic asthma was a diagnosis made in forty-six patients, or 35 per cent of the 132, chiefly because the history included the story of changes in the symptoms corresponding to changes in the environment or diet. The diagnosis was confirmed by the prompt relief in the hospital, where all but two of these patients were relieved of their asthma within five days, evidently because they had escaped from some particular substance, a dust or a food, which was causing trouble at home.

The intrinsic cases formed a larger group of seventy-four cases (56 per cent), which can be readily subdivided. In seventeen of these, the asthma had occurred in isolated attacks, of longer or shorter duration, which were usually precipitated by head colds. Between these attacks, the patients were essentially normal. Of the seventeen cases, seven were relieved within five days in the hospital. The others improved more slowly.

The chronic severe group will be discussed presently.

Thirteen patients had typical emphysema with a barrel-shaped chest over which the expiration was prolonged and high pitched. Some had cyanosis. All had dyspnea on any exertion and most of them had cough. In these cases, the emphysema was the result of long standing asthma which was complicated by secondary bronchial infection. It may be said parenthetically that other patients with little or no bronchial infection who were relieved of long standing extrinsic asthma by the elimination of the specific cause have shown, on later reexamination, chest outlines and lung signs which were normal. Apparently, therefore, emphysema can develop only in the presence of secondary infection.

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Included in the emphysema group were four old men whose symptoms first began in the late fifties, coming on without apparent cause insidiously. A blood eosinophilia was found in two, but skin tests were negative in all. In these men, the facts suggest a "primary" rather than a "secondary" emphysema.

The diagnosis of cardiac asthma was made in eighteen patients (1.3 per cent of the whole) and based on two principal points: First, the age of onset was usually beyond 50, and the duration of the disease was short. Second, the original attack was violent and occurred often during exertion or excitement, perhaps on the street or at work, and the later attacks were likewise precipitated by exertion. Half of these patients had well marked hypertension and few others had evidence of heart damage, as shown by pulse irregularities and electrocardiographic changes. By and large, however, the clinical evidence of decompensation was wanting and the diagnosis rested chiefly on the age and nature of the onset and on the history.

A miscellaneous group is necessary, because mixed cases showing factors that would place them in two groups at the same time are common. Mixed cases are always difficult.

The chronic severe group, however, forms the theme of this paper. It consists of twenty-five patients (19 per cent of the whole number) whose asthma was of maximum severity and was relieved only partially by ordinary treatment. In most of them, asthma developed between the ages of 30 and 50, the average age of onset being 38. Men and women were about equal in the group. The table shows that these patients had much in common with the other groups. Thus, the figure showing the percentage incidence of a positive family history is high. The occurrence of other allergic manifestations is the same as in other groups. Positive skin tests were found in 26 per cent of the cases. The occurrence of a blood eosinophilia of 5 per cent or more in 73 per cent is interesting.

In the hospital, none of these patients did well, although perhaps half of them improved a little during their stay. In each case, epinephrine was necessary at frequent intervals to control their symptoms.

The mode of onset of the asthma in this severe group is important and interesting. In five cases, the early story was of a series of isolated attacks, beginning in early life, even in childhood. In them, it is proper to regard the development of chronic severe asthma as an end stage of the early infection. In twenty cases, however, the onset was comparatively recent and sudden, and the course steady and progressive. In twelve of the twenty cases, this onset was after an acute infection of the respiratory tract. In eight cases, the onset of asthma was associated with operations on the nose, performed for the relief of chronic nasal symptoms. It was the operation itself that seemed to precipitate the severe asthma, which persisted and was uninfluenced by further local treatment, often radical in character. The development of severe asthma after nasal surgery is interesting. The sequence of events suggests either a sort of reflex effect or that the operation served merely to stir up the focus and lead to the development of an allergic reaction to it.

So far, the classification of chronic severe asthma has depended solely on the history of severe and continuous asthma, not modified appreciably by changes in environment. The size of this group will vary with the kind of cases studied. In this paper, I am dealing only with hospital cases, and 19 per cent are included in the chronic severe group. In 1928,[1] another series included asthmatic patients of every kind, and the designation of chronic severe asthma was made in only 2 per cent of the cases.

A study of the chronic severe group suggests a number of questions about asthma.

1. Is all asthma of extrinsic origin? Does every case depend on a hypersensitiveness to some nonbacterial substance? The question is not easily ruled out. Head colds precipitate asthma, to be sure, but they are not always the primary cause. Under certain conditions, some patients can have a head cold without having asthma; under other conditions, colds make a slight degree of exposure to the specific foreign substance effective, and these patients have asthma.

In the cases under consideration, all foods and dusts for which positive skin tests were obtained were eliminated at once. In addition, efforts to eliminate gross sources of dust have been made. Four of the patients were confined for more than seven days in a room made partially dust free with a rubber mattress and pillow and with air filtered through lamb's wool. Only one of them improved enough to suggest the escape from an extrinsic factor. In other cases, diets were advised even though skin tests to foods were entirely negative, but little change followed the empirical exclusion of eggs, wheat and milk, and in a few cases the elimination diets suggested by Rowe[2] were carried out with care but without success. I feel confident, therefore, that the influence of specific dusts and foods can be excluded and, as a corollary, that infections play the chief rôle in these cases.

2. Can severe asthma be of psychic origin? The possibility is hard to exclude. It is quite true that in a majority of our patients there were domestic incompatibilities, financial troubles, or some similar source of anxiety which might well have served as a psychopathic background. Elaborate psychic analyses have not been attempted, but in one or two instances a quiet effort to distract attention from the attack or to encourage breathing of a more even and efficient type has helped. The patient and the result have suggested that "nerves" were important. On the other hand, organic lesions were present. A blood eosinophilia of 5 per cent or more was found in 72 per cent of the patients in this group, and almost all had evidence of focal infection, as will be discussed presently. Furthermore, it appears to me as obvious that asthma which is chronic and severe can produce not only "nerves" in the patient but unhappiness and financial difficulties in the home. The contemplation of "nervous" asthma as a primary factor is dangerous.

3. What is the rôle of chronic infections? In times past it has been stated that lesions in the nose and throat could often be regarded as a part of the asthma rather than a cause of it.[3] The reason for this statement was that such lesions as thickened membranes and cloudy sinuses as shown by x-rays, as well as nasal polypi, were common in asthma of all types, including that type in which the asthma depended on a known extrinsic cause. Furthermore, among the 213 cases formerly described[4] in which there was relief of asthma for over two years, nasal polypi and advanced sinusitis

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[1] Rackemann, F. M.: Studies in Asthma: I. A Clinical Survey of 1,074 Patients with Asthma Followed for Two Years, J. Lab. & Clin. Med. **12:** 1185 (Sept.) 1927.

[2] Rowe, A. H.: Food Allergy: Its Manifestations, Diagnosis and Treatment, J. A. M. A. **91:** 1623 (Nov. 24) 1928.

[3] Rackemann, F. M., and Tobey, H. G.: Studies in Asthma: IV. The Nose and Throat in Asthma, Arch. Otolaryng. **9:** 612 (June) 1929.

[4] Rackemann, F. M.: Studies in Asthma: II. An Analysis of Two Hundred and Thirteen Cases in Which the Patients Were Relieved for More Than Two Years, Arch. Int. Med. **41:** 346 (March) 1928.

were found in thirty-one instances, and, nevertheless, apparent recovery had ensued without any operation being performed.

In the present group of twenty-five chronic severe cases, evidence of chronic infection in the nasal sinuses was found in all but two, and in twelve cases in which nasal polypi had been removed in the past or were present now, a diagnosis of pansinusitis was made. All the cases except two showed the presence of thick membrane in the sinus roentgenograms. In the other groups, lesions in the sinuses were found in a few cases. They were sometimes of equal severity, but in many cases they were not seen at all.

Operations had been performed previously in seven of our twenty-five cases, and four more were operated on while under observation; but in none of the eleven cases was anything more than a transient benefit obtained. While the literature contains reports of many patients relieved of their asthma by nose and throat operations, the proportions of these good results in severe cases is probably very small.

That the peribronchial shadows in the roentgenograms represent a focus of infection in the bronchi or in the neighboring lymph nodes is a possibility which cannot be excluded. One cannot say, however, that the shadows in the chronic severe cases were different in quantity or quality from the shadows in other cases.

Methods of treatment have included bronchoscopy. While bronchoscopy has been performed on only one of this particular group of patients and then without great relief, Dr. Weille[5] in our clinic has studied other patients with severe asthma and has frequently found a definite accumulation of tenacious sticky exudate in the bronchi. In eleven out of fifteen cases, the removal of this material by suction brought relief to the asthma which lasted for several weeks and, in three instances, for over a year. The method deserves a further trial.

The possibility of interrupting the nerve pathways over which the impulses from a local process might travel to and from the lungs has been considered. Having demonstrated transient relief to the asthma by a paravertebral injection of procaine hydrochloride, Dr. James C. White has been good enough to remove the parasympathetic ganglions in two of our cases. One of them (N. K.) a woman, aged 46, thin and emaciated from long continued distressing asthma showed no change during the first month after operation but then improved, and now, two years later, she has gained 40 pounds (18 Kg.) and is almost free from asthma. The control for this first experiment, however, has ruled its importance out. Another woman (C. H.), whose history and experiences were very similar, and who was observed in about the same month and year, was not operated on and yet she also has gained 40 pounds and has likewise become almost free from asthma for reasons quite unknown. The second patient (S. T., a man) likewise failed to gain in the first month after operation but now, four months later, is improving a little.

Nonspecific treatment in the form of intravenous typhoid vaccine has been tried in seven cases and was repeated in two of them. The benefit, however, was slight and temporary, never permanent.

COMMENT

This account of twenty-five severe cases is discouraging. Fortunately, however, asthma of such severe character is not common. Only a few patients have asthma which is bad enough to require hospital treatment, and the accompanying table shows that nearly half of all these are relieved of their symptoms within five days after admission. Only about one in five of the hospital patients has asthma that is chronic and severe.

What causes the trouble in these severe cases? The problem is difficult and the approach has been limited and unsatisfactory. So far one can only speculate.

Extrinsic factors can be excluded. Psychic factors are of secondary rather than primary interest. Focal infections are probably important.

The table shows that the incidence of a positive family history, of "other allergy," of positive skin tests, and of eosinophilia in the group is comparable to the incidence of these factors in the other groups, and this suggests a common background for all the groups.

Allergy is the capacity to develop sensitiveness to foreign substances, the list of which is ordinarily restricted to those present in foods and dusts of all kinds, especially pollens and animal danders. I can see no reason for this restriction and believe that cases depend on two principal factors: The one is the presence of a chronic infection; the other is the abnormal (allergic) reaction of the host to this infection. The physiologic nature of this reaction remains to be determined. In the understanding of it lies the key to the treatment of asthma.

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[5] Weille, F. L.: Studies in Asthma: XIV. Bronchoscopy in Asthma, New England J. Med. **205**: 848 (Oct. 29) 1931.

SERUM THERAPY

ITS VALUE IN PNEUMONIA, MENINGITIS, SCARLET FEVER AND OTHER STREPTOCOCCUS INFECTIONS

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The bacterial incitants of infectious disease vary greatly in virulence, in their parasitic adaptation to the tissues of an animal, in the potency of the toxins that they produce and in their immunizing action. It is these capacities that determine not only the character, extent and course of the disease, but also the potency, valence and quality of the therapeutic serums that are prepared from them. From the beginning, the quality of the antipneumococcus, [illegible] and antistreptococcus serums that [illegible] available has varied greatly.

ANTIPNEUMOCOCCUS SERUM

At first antipneumococcus serum was thought to have an action similar to that of diphtheria antitoxin. Certainly pneumonia presents sufficiently convincing evidence of the toxemia and of the neutralization of the toxin during the crisis, although ultimate recovery depends on the extent and severity of the bacteremia. Practical results with serum therapy have been attained only in the treatment of type I pneumonia; not that antipneumococcus serum of other types is not or may not become effective, but that it is still in the experimental stage.

This limitation adds, perhaps, to the importance of the incidence of the different types of infection. Reports on the type diagnosis of pneumonia have been received from many of the states and from foreign

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From the Division of Laboratories and Research, New York State Department of Health.

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countries. Although the number of cases in some districts is too limited to be of significance, yet the series that we have been able to tabulate is of special interest since the tests were all made with our diagnostic serums. An indeterminate but negligible number of the tests outside New York State were made in cases in which the patients did not have pneumonia.

Although knowledge of the virulence of the pneumococcus has progressed, there are yet no definite criteria by which to evaluate differences in toxicity or antigenicity which would form a scientific basis for the selection of strains for serum production. Furthermore, the standardization of the serum has been limited to the protection test. The practical value of the refined globulins has not been demonstrated beyond question. The clinical reports on their use do not indicate any better results than have been obtained with serum. The practice of concentrating serum of low potency is commercially profitable, but there is no practical advantage unless these methods are used solely to improve the quality of serums of the highest potency attainable. When such highly potent serums have been subjected to special methods of concentration, refined products have been obtained which, according to improved methods of testing, surpass any of the serums we have tested, but there are as yet no clinical data to indicate that they are actually therapeutically more effective than serum of the highest potency.

Table 1.—*Type Incidence of Pneumococci, 1915-1931*

Locality	Total	Type I		Type II		Type II* Atypical		Type III		Type IV		Combined*	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
New York State	22,324	4,381	20	2,248	10	200	1	3,696	16	11,533	52	266	1
United States exclusive of New York State	6,418	1,279	20	943	15	..	...	876	13	3,320	52	...	...
Canada	557	106	19	69	12	...	..	56	11	326	58	...	...
Europe	1,353	423	31	240	18	...	...	229	17	461	34	...	...
Far East	584	210	36	67	12	...	...	36	6	271	46	...	...

* The determination of atypical type II and combined types has been reported by so few laboratories outside New York State that the figures lack significance and have been omitted.

Table 2.—*Potency of Antipneumococcus Serums from Different Laboratories as Determined by Protection Tests in Mice, 1932*

Laboratory	Therapeutic Dose, Cc.	Amount Protecting Against 0.1 Cc. of Standard Culture: Standard Control Serum, Cc.	Amount Protecting Against 0.1 Cc. of Standard Culture: Tested Serums (Concentrated), Cc.
A	10	0.01	0.01
D	5	0.01	(approx.) 0.01
E	30 10	0.01 0.01	+0.1 * (approx.) 0.01
F	8	0.01	0.005
H	...† 50	0.01 0.01	(approx.) 0.005 0.01‡

* Special preparation.
† Not for distribution.
‡ Unconcentrated.

Reports have been received on 853 cases of type I pneumonia, including two separate series totaling 191 from Dr. Rufus Cole of the Hospital of the Rockefeller Institute, the mortality of which was 10.9 per cent. A more detailed study of 445 of these cases has been reported.[1] With the additional cases, the total mortality is 12.4 per cent. Thus, with the elimination of cases in which the patients were unsatisfactorily treated, the mortality approaches that at the Rockefeller Hospital. The serum is the same as that used by Dr. Cole in his recent work. The earlier serums were not identical, but quite similar. A comparable series of 362 cases in which the patients were not treated had a mortality of 19.8 per cent, which approximates the mortality of pneumonia in general—all cases, 20 per cent.

The limitations of serum therapy have thus been defined by practical experience. The selection of more effective strains for the immunization of the horses, the development of new methods of immunization and, finally, improved methods of concentration at present offer the only promise of future progress.

ANTIMENINGOCOCCUS SERUM

Knowledge of the virulence and pathogenicity of the meningococcus unfortunately is extremely limited. The experimental study of infection is hampered by the lack of laboratory animals that are susceptible to true infection and the difficulty of differentiating the toxic products. The mortality of endemic and of epidemic cases at different stages of an outbreak indicates marked fluctuation either in the virulence of the incitant or in the susceptibility of the host. The high mortality of the early cases in an outbreak suggests rapid and marked exaltation of the virulence, doubtless in part due to rapid passage from one extremely susceptible host to another, while the relatively low mortality of later cases may be attributed to the abatement of virulence in slower passage and a diminution in the number of susceptible hosts.

Unsuccessful attempts have been made to identify a particular strain with the epidemics of high mortality, which have occurred recently in Salt Lake City, Chicago, Indianapolis, Detroit and elsewhere. Representatives of more than one group, chiefly I and III, have been found in these outbreaks, and no special significance has been attributed to any one strain.

A previous paper[2] records in detail the results of comparative tests of the agglutinative activity of therapeutic serums from different laboratories, together with the results of serum therapy in 606 cases. Additional data have been included in this report; the average agglutinative titers of the serums have also been charted to facilitate comparison.

The character of the disease processes, the virulence of the infection, whether it is endemic or epidemic, whether it is early or late in the course of an outbreak, on the one hand, and, on the other, the quality of the serum and the stage of the disease at which it was given, all affect the results and the rate of mortality. The additional 136 cases in which the patients were treated with serum H since the last report only slightly increase the mortality—18.4 per cent, as compared with 17.8. Comparison with the statistics of other observers since the early work of Flexner is difficult because conditions of treatment vary, as does also the severity of the disease. Many patients with fulminating cases die irrespective of the serum used. Among these cases bacteremia rarely occurred without meningitis. The cerebrospinal processes usually determine the course of the disease. Intravenous administration of the serum, while it affords the opportunity of introducing larger quantities of serum and thus protecting the body generally, should not supplant intraspinal or intracisternal injection. If used at all, it should follow rather than precede the other methods of administration.

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[1] Wadsworth, A. B.: Review of Recently Published Reports on the Serum Treatment of Type I Pneumonia: Together with a Report of 445 Additional Cases, Am. J. Hyg. 4: 119 (March) 1924.

[2] Wadsworth, Augustus B.: Meningococcus Meningitis: The Results of Recent Investigation in Relation to Serum Therapy, Am. J. Hyg. 14: 630 (Nov.) 1931.

Treatment as soon as a diagnosis is established and adequate dosage are essential. The severity of the disease is not a contraindication; even patients with cases that appear to be of the fulminating type do, in some instances, respond to serum treatment and recover. The practical value of concentrating the serum has not been demonstrated, and without more satisfactory methods of standardization than are available at present it will be difficult to determine.

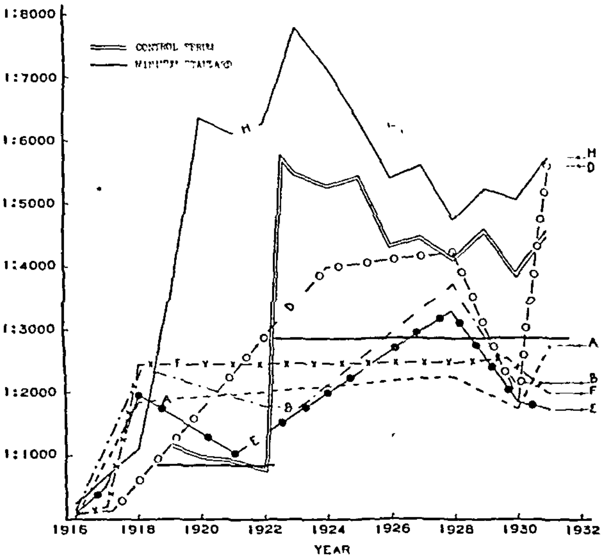

Chart 1.—Average agglutinative titers of antimeningococcus serums from different laboratories with New York State standard strains.

The cases have been classified according to age groups in order to record the mortalities of each group as well as the total mortality; the cases in which the patients were treated with more than one serum are recorded in a separate table. Comparison of the results of treatment with more than one serum with the results of the titration of the potency of these different serums by the agglutination test is of interest in that by far the greater number of cases responded to the serum of the highest agglutinative titer, and the mortalities in the cases so grouped indicate a corresponding therapeutic potency.

ANTISTREPTOCOCCUS SERUM

A renewed interest in the serum therapy of scarlet fever has followed the studies of Dochez and the Dicks. Further studies of the toxins of the streptococci, from scarlet fever, erysipelas and other forms of streptococcus infection have revealed the fact that although these toxins differ and might conceivably be grouped according to their reactions, no one group is associated with any particular type of infectious process—quite the contrary. Strains among the streptococci isolated from the throats of patients with scarlet fever or from the blood stream produce toxins that may have a narrow or an extremely broad valence and a high or a low potency, when tested on susceptible animals. The same is true of the streptococci obtained from cases of erysipelas, septic sore throat and puerperal and other infections. Moreover, the toxin of a streptococcus strain may incite a reaction that is neutralized by a specific serum in one susceptible person and not in another. Similarly, the immune serum produced in one animal species when compared with that produced in another may differ in the neutralization of the homologous toxin, depending on the animal in which it is tested. An immune serum may only partially neutralize a heterologous toxin, or may neutralize the toxins of other strains, the immune serums of which do not neutralize its toxin. Thus it is that the interaction of these different toxins with their immune serums in different animal tissues is a complex mechanism at present little understood. Nevertheless, it is these activities that determine the selection of strains for the production of satisfactory serums in the treatment of infection.

Table 3.—*Patients with Meningococcus Meningitis Treated with Antimeningococcus Serum 1920—(April) 1932*

Ages	Total	Recoveries	Deaths	Mortality, per Cent
Under 1 year	131	83	48	36.6
1 to 2 years	58	49	9	15.5
2 to 5 years	144	133	11	7.6
5 to 10 years	128	113	15	11.7
10 to 20 years	157	134	23	14.6
20 years and over	124	93	31	25.0
Total	742	605	137	18.4

Whether the relationship of the streptococcus to scarlet fever is a primary or a secondary one, the streptococcus processes are the ultimate objectives from the practical standpoint of effective serum therapy. It is most unfortunate that the serums for the treatment of this disease have lacked valence and a sufficient potency. Efforts to improve the quality of the serum have not been lacking. As a result of conferences, the federal authorities established a minimum standard of potency for these serums, namely, *200* units per cubic centimeter, and also methods of testing with standard toxin and antitoxin for control.

Table 4.—*Patients with Meningococcus Meningitis Treated with More Than One Serum*

Results of Treatment	Cases	Recovered	Died	Mortality, per Cent
Serum H ineffective; other serum effective	7	3	4	57.1
Results indeterminate*	139	108	31	22.3
Serum H effective; other serum ineffective	52	48	4	7.6
Total	198	159	39	19.6

* Cases classified as indeterminate:
1. Data incomplete—clinical observations not recorded, although it is known that a change of serum was made because of the lack of improvement.
2. Change of serums so frequent as to render it impossible to correlate improvement definitely with any one serum, despite fluctuations in the cell count and a diminution in cocci.

Titration of samples of serum from different laboratories since 1927 has revealed the fact that, with the exception of one laboratory, the margins by which the minimum requirements were exceeded were insufficient, especially since when tested with different toxins, some of the serums possessed only a narrow range of activity. Progress was so unsatisfactory that the Public Health Council of New York State, with the approval of the National Institute of Health, established independently a minimum standard of potency of 400 units per cubic centimeter and methods of testing against a standard toxin to insure the availability of serums of sufficient potency and valence. It would appear that the adoption of these regulations excluded even those serums which were manufactured under license of the Scarlet Fever Committee and approved by them for distribution. The results of the titration of these serums, according to the federal and state standards, have been recorded in two charts.

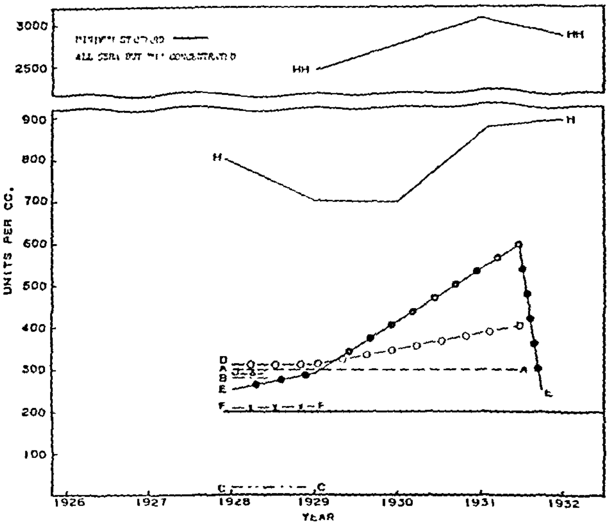

Chart 2.—The antitoxic potency of antistreptococcus serums from different laboratories—titrated with federal standard toxin.

TABLE 5.—*Patients with Scarlet Fever Treated with Unconcentrated Antistreptococcus Serum, Titer from 600 to 900 Units Per Cubic Centimeter*

Type of Case	Total	Uncomplicated Cases	Recoveries: Complicated Cases; Serum Treatment: Effective	Improved Condition	Inconclusive	Not Effective	Deaths*	Mortality, per Cent
Severe......	402	214	93	18	24	11	42	10.4
Moderate...	441	342	51	15	17	12	4	0.9
Mild........	209	186	16	3	4	..	0	0.0
Total.....	1,052	742	160	36	45	23	46	4.3

* Of the 46 fatalities, 35 had complications; 11 had none, but 2 of these were fulminating types, 1 severely toxic, and 8 received their first dose of serum less than twenty-four hours before death.

Premature conclusions not only as to the limitations of serum therapy but with respect to the etiologic relationship of a specific streptococcus have also greatly impeded progress. It is necessary to stress the development of a broader valence in the serum and also its application to other forms of streptococcus infection, since it has not been possible to recognize a strain specific to scarlet fever.

The serum that we have distributed for the treatment of streptococcus infection in New York State is monovalent, prepared by the immunization of horses with a single strain of streptococcus—the Dochez N. Y. 5. It is not concentrated, and its antitoxic potency, as determined by titration against both the federal and the state standard toxins, is at least 800 units per cubic centimeter. It has definite protective action as determined by tests in mice.

The reports on the use of this serum that we have received now include many forms of streptococcus infection: 1,052 cases of scarlet fever, 194 of erysipelas and a miscellaneous group, including septic sore throat, cellulitis, mastoiditis and puerperal infection, some of them with bacteremia. The results in the treatment of scarlet fever confirm the conclusions of previous observers; namely, that the serum is most effective in cases predominantly toxemic, whether mild or severe. The general impression that the serum has no effect on the complications may be questioned, especially since the potency of the serums generally available has been so unsatisfactory and the doses have been so utterly inadequate for the treatment of streptococcus infection characterized by a bacteremia or a parasitic invasion of the tissues. Doses of from 10,000 to 20,000 units should be used in such cases and should be repeated at twelve or twenty-four hour intervals if necessary.

TABLE 6.—*Patients with Erysipelas Treated with Unconcentrated Antistreptococcus Serum, Titer from 600 to 900 Units Per Cubic Centimeter*

Type of Case	Total	Recoveries; Serum Treatment: Effective	Doubtful	Not Effective	Deaths	Mortality, per Cent
Severe............	106	67	19	7	13	10.6
Moderate.........	53	40	6	4	3	5.6
Mild..............	16	12	2	2	..	....
Not recorded.....	19	13	5	1	..	....
Total..........	194	132	32	14	16	8.2

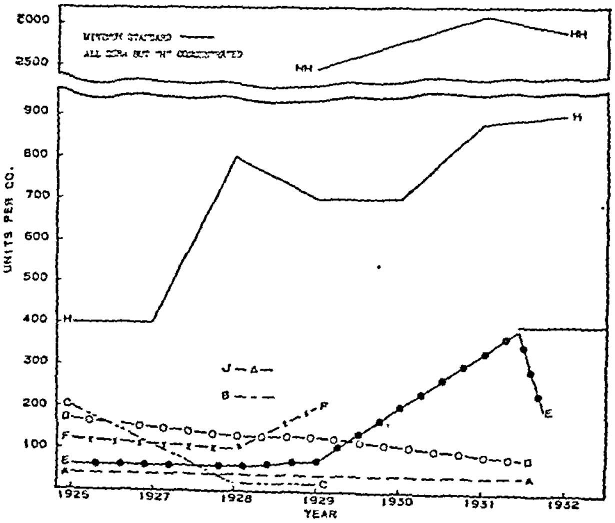

Chart 3.—The antitoxic potency of antistreptococcus serums from different laboratories—titrated with New York State standard toxin.

In erysipelas the effect of the serum on the toxemia is quite similar to that observed in scarlet fever, and this is the first manifestation of a beneficial action. In some instances the local processes subside almost coincidentally; in other instances, after a longer or a shorter interval. There are cases of erysipelas, as of scarlet fever, in which the serum appears to have no action. The results in septic sore throat were definitely favorable, especially when the serum was administered early. Comparatively few patients failed to respond. The reports on 194 cases of erysipelas have been classified in table 6 according to the severity of the disease, as to whether the serum was effective or had no definite action and whether the patient recovered or died.

The attenuation that the bacterial incitants of infection undergo in the tissues has recently aroused widespread interest. Quite apart from the significance of the cultural variation, colony formation and various serologic reactions that have been so extensively studied of late, the fact that a virulent incitant, such as the pneumococcus, as a result of survival in the tissues of an animal that is immune, may lose its virulence and undergo fundamental biologic attenuation is especially significant. The pneumococcus and streptococcus are closely related bacterial species. As our study of the streptococci has progressed it seems most reasonable to attribute the variation in virulence, in toxin production and in antigenic action in the tissues to attenuation due to a similar survival in infectious processes in different parts of the body or to a prolonged existence as a relatively harmless parasite. Many of the streptococci from fatal human infections lack virulence when tested in laboratory animals, and produce little or no toxin, whereas others from less serious conditions—from those of the pharynx, for example—are not only virulent, but toxigenic.

The serum therapy of streptococcus infection should be developed from a broad point of view. We are only on the threshold of this field of serum therapy. Many, if not all, of us, whether in the laboratory or at the bedside, are bewildered by the uncertainty of our knowledge, and it is not so much the purpose of this paper to urge the treatment of streptococcus infection in general, as it is to stimulate the painstaking investigation of the mechanism of the action of the streptococcus toxin in order that effective serums may be produced and may be available for early and intensive treatment before the streptococcus processes have advanced to a stage where the prognosis becomes definitely unfavorable.

ABSTRACT OF DISCUSSION

Dr. W. G. Smillie, Boston: Dr. Wadsworth said, "The early administration of serum in pneumonia of the highest potency and valence in adequate doses cannot be too strongly emphasized if favorable results are to be obtained from treatment." I wish to place special emphasis on the first three words of that sentence; namely, the early administration of a serum of high potency. It is generally agreed by men familiar with the use of antipneumococcus serum that the results will be unfavorable if the serum is administered on the fourth day or later. Results will be highly favorable if the individual infected with type I pneumonia can be treated on the first or second day of the disease; correspondingly, in later periods the serum would be of little value. It is perfectly obvious, therefore, that if one is to secure good results with antipneumococcus serum it is necessary to treat the patient early in the disease. This will not be possible in hospital cases, as the great proportion of cases are not admitted to the hospital until the third or fourth day of the disease. It is most essential, therefore, that if good results with antipneumococcus serum are to be secured, the serum must be available to the family physician. How is it possible to bring this about? A brave attempt has been made in one of the states. It is purely an experiment, but it is worth while reporting. Six or eight areas were selected in the smaller communities in the state. In each one of these areas a physician was selected who should be the pneumonia consultant for the area. These consultants were brought to the large medical center and given a special course in pneumonia therapy. The technicians from the local hospitals in the areas were then given special training in pneumococcus typing. A concentrated type I and II serum was furnished free by the state to the various consultants. All physicians in the area were informed that this service was available. If any physician desired this service he, immediately on suspecting a case of pneumonia, called in the consultant. If the patient was too poor to pay for the consultant and the service, the state paid the consultant a flat fee of $15 for his service. Usually the case was seen the first or second day of the disease. If a definite diagnosis of lobar pneumonia was made at the bedside, serum was administered at once, irrespective of the type of the case. It so happens that approximately 25 per cent of the cases of lobar pneumonia in this state are type I. Sputum was obtained at the same time, and within a reasonable time, usually within twelve hours, the type of pneumonia the patient had was known. If the pneumonia was type I or type II, the serum was continued. If the pneumonia was not type I, it was felt no particular harm had been done.

Dr. Harold Amoss, Durham, N. C.: In China, where I had an opportunity to observe a most virulent form of scarlet fever, the mortality was very high. Patients admitted on the second or third day of the disease with the most marked symptoms of a toxemia, sometimes with hemorrhage, and evidence of overwhelming toxemia were in some instances dramatically relieved by serum. There were patients admitted as early as the forty-ninth hour of a severe attack of scarlet fever who died between the fourth and the fifth day regardless of the amount of serum injected. Some patients weathered this particular stage of the disease and apparently improved to a slight extent, later to have complications, such as cervical adenitis, beginning the ninth to the eleventh day. Many of them died between the eleventh and the fourteenth day with streptococcemia. Dr. Wadsworth called attention to the fact that the monovalent serum that has been produced for the treatment of scarlet fever has been useful or suggestively useful in the treatment of other streptococcal infections. We had the opportunity to confirm this, and also had results which suggest that anti-erysipelas serum prepared from six strains may be, in some cases, effective in scarlet fever. We had some data which lead us to believe that in the treatment of scarlet fever we must have more than a purely antitoxic serum, and to that end Dr. Richard Sia of the Peiping Union Medical College is preparing a multivalent antiscarlatinal serum by a method designed to provoke antibacterial as well as antitoxic properties.

Dr. Virgil E. Simpson, Louisville, Ky.: The Committee on Arrangements of the United States Pharmacopeia is now considering the acceptance or rejection of various serums in the eleventh edition of the U. S. Pharmacopeia. We are confronted with several problems in connection therewith and I have been particularly interested in the point of view stressed this afternoon. One of the things with which we are confronted is the question of patent rights, and so forth, which cover some of these products, and the Committee on Revision will appreciate such expressions of opinions as any may wish to send within the next two months to guide us in our work.

Dr. Augustus B. Wadsworth, Albany, N. Y.: I wish to stress the point that Dr. Amoss made. That is one reason I pointed out that the serum was monovalent and there were cases of scarlet fever and of erysipelas which did not respond; also, as shown in the charts, that even though serum H was monovalent—produced with a single strain—it had a broader valence than the other serums with which it was compared and which were produced by four or more strains. In presenting this work on the antistreptococcus serum, I do not wish to give the impression of endeavoring to stimulate the treatment of streptococcus infections in general, although that is the ultimate objective, so much as to stress the importance of an intensive study of the toxin production by these different strains and their antigenic action; that is, their immunizing action in producing serums. It is of the utmost importance in developing this serum, from the standpoint both of potency and of valence, that appropriate strains be selected, and that is the step on which we are now working intensively in an endeavor to complete the range of probable valence necessary. We have studied now at least 1,000 strains of streptococci, and I do not think we have found more than twelve or fifteen that are satisfactory.

The work in Massachusetts has interested me and I am sure Dr. Smillie will find it most successful. It is practically what we have been doing in New York State, and very successfully indeed, for the past fifteen years. It is practical and it will be a public service.

POSTOPERATIVE PULMONARY COMPLICATIONS

A STUDY OF THEIR RELATIVE INCIDENCE FOLLOWING INHALATION ANESTHESIA AND SPINAL ANESTHESIA

A. LINCOLN BROWN, M.D.
AND
MARTIN WARREN DEBENHAM, M.D.
SAN FRANCISCO

In a previous communication,[1] the belief was expressed by one of us (A. L. B.) that the incidence of postoperative pulmonary complications, especially atelectasis, appeared to be greater following spinal (subarachnoid) anesthesia than after inhalation anesthesia. To determine the validity of this impression, the statistical studies here reported were undertaken. They are founded on an unselected group of 812 consecutive case histories of patients operated on at the San Francisco Hospital (surgical service of the University of California Medical School) and at the University of California Hospital, from July 1, 1929, to June 31, 1930. During this period an intensive study was made of all cases regarding the development and prevention of various postoperative pulmonary complications regardless of the type of anesthesia used. The choice of anesthesia depended on the individual surgeon. The tables show that about as many "serious major" operations were done under general anesthesia as under spinal anesthesia; but it should be noted that the consensus of the surgical staff is that the old patient, the patient in shock, the patient who is a poor risk generally, should not be given a spinal anesthetic. Hence more of these patients were operated on under an inhalation anesthetic. In spite of this, postoperative pulmonary complications were almost five times more frequent after spinal anesthesia than after inhalation anesthesia (table 1). Patients who received both types of anesthesia are not included in these studies.

Table 1.—*Postoperative Pulmonary Complications Following Inhalation and Subarachnoid Anesthesia*

	Total Cases	Postoperative Pulmonary Complications	Percentage of Complications
Inhalation anesthesia..........	474	6	1.3
Subarachnoid anesthesia......	338	25	7.4

Table 2.—*Postoperative Pulmonary Complications Following Abdominal Surgery*

	Inhalation Anesthesia			Subarachnoid Anesthesia		
	Cases	Complications	Per Cent	Cases	Complications	per Cent
Upper abdomen....	13	0	0	41	8	20.5
Appendectomy.....	31	3	10	90	8	8.9
Herniotomy.......	19	0	0	45	6	13.3
Total..........	63	3	4.8	176	22	12.5

Table 3.—*Postoperative Pulmonary Complications in Surgery of Lower Extremity and Perineum*

	Inhalation Anesthesia			Subarachnoid Anesthesia		
	Cases	Complications	Per Cent	Cases	Complications	Per Cent
Rectal fistulas............	12	0	0	17	3	2
Bone surgery (open)........	20	0	0	24	1	4
[illegible]	45	0	0	22	1	4.5
[illegible]	14	0	0	21	1	4.7
[illegible]	3	0	0	9	0	0
Incision of abscess..........	56	0	0	15	0	0
[illegible]	20	0	0	9	0	0
[illegible]	1	0	0	15	0	0
[illegible]	1	0	0	19	0	0
Total....................	172	0	0	151	6	4

Table 4.—*Postoperative Pulmonary Complications in Surgery of the Torso*

	Inhalation Anesthesia			Subarachnoid Anesthesia		
	Cases	Complications	Per Cent	Cases	Complications	Per Cent
Operations on kidney........	17	0	0	2	0	0
Cystotomy..................	2	0	0	7	0	0
Spine......................	9	0	0	0	0	0
Thorax.....................	6	0	0	0	0	0
Miscellaneous..............	21	0	0	2	0	0
Total....................	55	0	0	11	0	0

Table 5.—*Postoperative Pulmonary Complications in Surgery of Head, Neck and Upper Extremity*

	Inhalation Anesthesia			Subarachnoid Anesthesia		
	Cases	Complications	Per Cent	Cases	Complications	Per Cent
Bone surgery (open).........	17	0	0	0	0	0
Closed manipulation.........	29	0	0	0	0	0
Mastoidectomy..............	40	0	0	0	0	0
Incision of abscess..........	60	1	1.7	0	0	0
Thyroidectomy..............	9	1	11.1	0	0	0
Ear, nose, throat, nerve and miscellaneous............	29	1	3.4	0	0	0
Total....................	184	3	1.7	0	0	0

Table 6.—*Summary of Complications by Regions of the Body Operated On*

	Inhalation Anesthesia			Subarachnoid Anesthesia		
	Cases	Complications	Per Cent	Cases	Complications	Per Cent
Abdominal..................	63	3	4.8	176	22	12.5
Lower extremity and perineum......................	172	0	0	151	3	2
Upper extremity, head and neck......................	184	3	1.7	0	0	0
Torso......................	55	0	0	11	0	.0
Total all cases............	474	6	1.3	338	25	7.4

It is noted, moreover, that this adverse ratio for spinal anesthesia still is evidenced when the cases are grouped by the region of the body operated on, or by the type of operation performed (tables 2, 3, 4, 5, 6 and 7).

The average duration of operation was more than half again as long under spinal anesthesia as under general anesthesia. Postoperative pulmonary complications were 4.29 times more frequent after spinal anesthesia than after general anesthesia (table 8).

In the majority of instances, atelectasis was the complication found. Moreover, as has been pointed out

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Supported in part by the J. J. and Nettie Mack Foundation.

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[1] Brown, A. L.: Postoperative Pulmonary Atelectasis: Observations on the Importance of Different Types of Bronchial Secretion and Anesthesia, Arch. Surg. 22:976-982 (June) 1931.

frequently, the more closely the operative procedure approaches the region of the diaphragm, the greater is the incidence of postoperative pulmonary complications. The question naturally arises, Why does spinal anesthesia seem to increase the incidence of postoperative pulmonary complications, especially atelectasis? We can only repeat a previous statement[1] which one of us has made, to wit:

> At first thought, one would imagine the opposite to be true, that postoperative pulmonary atelectasis would occur more frequently following inhalation anesthesia. But, on closer consideration, several reasons are noted why spinal anesthesia might predispose to this complication. First, spinal anesthesia definitely inhibits the depth and force of respiratory movements, not only during the operation itself, but for a considerable period thereafter. It is these respiratory movements (both intrinsic and extrinsic) which tend to rid the tracheobronchial tree of foreign matter or secretions. Second, the normal viscosity of the secretions of the tracheobronchial tree appears to be increased, i. e., the material is more tenacious following spinal anesthesia. Third, following operation under spinal anesthesia the patient tends to remain relatively quiet for a number of hours. One has, then, a more tenacious sputum and decreased or impaired factors that might tend to free the tracheobronchial tree of this material. The increased possibility for this material to obstruct or plug a bronchus and the subsequent development of atelectasis appear reasonable.

Table 7.—*Classification by Type of Postoperative Pulmonary Complication Diagnosed*

	Inhalation Anesthesia				Subarachnoid Anesthesia			
	Atelectasis	Broncho-pneumonia	Hypostatic Pneumonia	Infarct	Atelectasis	Broncho-pneumonia	Hypostatic Pneumonia	Infarct
Upper abdomen........	0	0	0	0	5	2	1	0
Herniotomy...	0	0	0	0	4	2	0	0
Appendectomy.... .. .	2	1	0	0	3	3	0	2
Lower extremity.......	0	0	0	0	1	1	1	0
Upper extremity.	2	1	0	0	0	0	0	0
Total..............	4	2	0	0	13	8	2	2

Table 8.—*Comparison of Average Duration of Operations (in Minutes)*

	Average Duration Under Inhalation Anesthesia	Average Duration Under Subarachnoid Anesthesia
Abdomen....................	60	90
Torso.......................... ...	50	100
Lower extremity............	35	45
Upper extremity...................	47	..

It is further to be noted that spinal anesthesia markedly increases the time required for the operative procedure.

SUMMARY

1. Statistics showing the relative incidence of postoperative pulmonary complications following inhalation anesthesia and subarachnoid anesthesia are presented.
2. In this series of 812 cases, postoperative pulmonary complications were 4.29 times more frequent after subarachnoid anesthesia than after inhalation anesthesia in spite of the fact that more "bad risk" patients were operated on under inhalation anesthesia.
3. The adverse ratio for subarachnoid anesthesia is found regardless of the region of the body operated on or the type of operation performed.
4. The more closely the operative procedure approaches the diaphragm, the greater is the incidence of postoperative pulmonary complications.

SPINAL ANESTHESIA

ITS EFFECT ON THE CENTRAL NERVOUS SYSTEM

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In reviewing the literature on spinal anesthesia, one is surprised to find a large number of articles in which thousands of cases have been reported, but few of them give the clinical observations of the neurologic examination and the neurologic complications and necropsy observations.

Barker,[1] Pitkin,[2] Babcock,[3] Koster,[4] Labat[5] and others have described the technic of spinal anesthesia. In the series of cases composing the present report, the method of administering the anesthesia was the same. The patients were given morphine half an hour before the operation and ephedrine sulphate subcutaneously immediately before the spinal puncture. The spinal punctures were done with the patient lying on his side. About 3 cc. of spinal fluid was removed and 1.5 cc. of apothesine (γ-diethylaminopropyl cinnamate hydrochloride, N. N. R.) injected slowly without barbotage, and then the patient was immediately placed in the Trendelenburg position.

Eleven consecutive cases in which operation was done for prostate disease were studied. The ages of the patients varied from 50 to 70 years. Complete neurologic examinations were done before and during the operation, six hours and twenty-four hours after the operation, and finally before discharge from the hospital.

After administration of the anesthesia, the patients noticed numbness of the extremities. This was followed by a loss of pain, heat and cold sensation. The segmental level reached to about the eleventh dorsal segment in all instances except one, in which the level rose to the second cervical segment. Sense of motion and position of the toes was lost in two cases and vibratory sense was impaired in two others. In six cases there was a marked vasomotor reaction below the level of the anesthesia. During the operation, anesthesia was so established that the surgeon's work was unimpaired by the patient's complaints. No sensory changes were demonstrable six hours after operation.

Soon after the sensory conditions were noted, the knee and achilles jerks were not obtained and this condition lasted for nearly six hours, when the reflexes were found to be more active than on the original examination. All the patients were able to move their legs actively during the period of anesthesia. In six cases, positive Babinski signs were noted. These manifestations disappeared within two weeks in all cases except two.

The most common sequel was the complaint of pain in the extremities, particularly the legs, but also in the back and, in one instance, the head. The pain in the legs persisted in three cases for several months and on the

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From the Neurological Service of the University Hospital, University of Michigan Medical School.

[1] Barker, A. E.: Clinical Experience with Spinal Anesthesia in One Hundred Cases, Brit. M. J. 1: 665-674, 1907.

[2] Pitkin, G. P.: Controllable Spinal Anesthesia, Am. J. Surg. 5: 537-553 (Dec.) 1928.

[3] Babcock, W.: Spinal Anesthesia: An Experience of Twenty-Four Years, Am. J. Surg. 5: 571-576 (Dec.) 1928.

[4] Koster, Harry; and Kasman, L. P.: Spinal Anesthesia for the Head, Neck and Thorax: Its Relation to Respiratory Paralysis, Surg., Gynec. & Obst. 49: 617-630 (Nov.) 1929.

[5] Labat, Gaston: Elimination of Dangers of Spinal Anesthesia, Am. J. Surg. 5: 625-632 (Dec.) 1928.

last examination was still in existence. In these cases there resulted a marked muscle tenderness in the extremities, which persisted for several months.

In the case in which the sensory level reached the second cervical segment, the patient had a severe headache, rigidity of the neck, and a positive Kernig sign. The tendon reflexes were active. There was a marked hyperesthesia over the body. There was a positive Babinski sign on the left. Vibratory sense was lost in the ankles, and there was a loss of the sense of motion and position of the toes. Within twenty-four hours there was also noted a paralysis of the right external rectus muscle. These conditions persisted for several weeks and in addition there developed a corneal ulcer. At the time of discharge from the hospital, the patient was asymptomatic except for pains in the arms and legs.

There were no apparent changes in the spinal fluid after the operation. The cell count was normal and there was no increase in albumin or globulin. The colloidal gold and mastic reactions were negative.

In this series, two patients died; the first, twenty days after operation:

His only complaints up to two days before his death were weakness and pains in the extremities. He suddenly went into coma, at which time his blood pressure was 138 systolic and 72 diastolic. The nonprotein nitrogen was 55.6 mg. The heart showed mild cardiac decompensation. The neurologic examination was negative except for diminished tendon reflexes. An autopsy was performed five hours after death. The pathologic diagnosis by Dr. C. V. Weller was as follows: Section of the spinal cord and meninges showed congestion and numerous small psammoma bodies in the meninges. The brain demonstrated congestion and edema in the meninges and brain substance. Throughout the lower portion of the pons and upper medulla there were numerous small false psammoma bodies of the myelin droplet type. There was advanced chronic bilateral ascending purulent pyelitis and pyelonephritis, hyperplasia of the prostate with urinary obstruction, urinary extravasation through areas of necrosis in the bulba urethrae, subacute purulent cystitis and prostatitis with fibrinopurulent exacerbation in the operative field, hypertrophy of the bladder musculature, generalized arteriosclerosis (most marked in the aorta and coronaries), calcifying endocardial sclerosis, myocardial fibrosis, nutmeg liver, and chronic adhesive pleuritis.

The second patient, who died twelve days following operation and who had been treated previously for syphilis, showed no evidence of organic disease of the central nervous system at the first examination. Following operation, he complained of pains in his arms and shoulders. The Kahn reaction, as well as other spinal fluid examinations, was negative. He had good anesthesia during the operation, but immediately following it he was confused and cooperated poorly. Apparently he was able to feel pain, and the tendon reflexes were hyperactive. The pathologic diagnosis made by Dr. C. V. Weller was as follows: There was edema of the meninges and spinal cord. No myelinosis was present in the upper cervical cord and in the medulla, but in the lower cord there was a marked myelinosis, especially near the meninges. Some small nerve roots showed an extensive degeneration of the fibers with a loss of myelin sheaths. There was advanced adenocarcinoma of the prostate, metastasis in regional and bronchial lymph nodes and vertebrae, partial transurethral recession of the prostate, chronic purulent cystitis, right ureteritis, pyelitis and pyelonephritis, pyemic abscess in the kidneys, pulmonary emboli, purulent lobular pneumonia, old syphilis (myocarditis, aortitis, hepatitis, suprarenalitis, orchitis), coronary and aortic arteriosclerosis, and endocardial sclerosis, with calcification.

Another patient, who was referred from a Detroit hospital to the University Hospital, complained of pain in the extremities and severe headaches. She had previously been studied well in the former hospital and was operated on eleven months before, when a cervical hysterectomy was done. At that time she received 170 mg. of procaine hydrochloride for the spinal anesthesia. Following the operation, the complaints were numerous. She complained particularly of headaches and of pains in the extremities. On admission to the University Hospital, she was well nourished and not acutely ill. There was no rigidity of the neck and no enlargement of the glands. The right pupil was larger than the left; they both reacted to light, but the left better than the right. The ocular fundi showed a slight endarteritis of the retinal arteries, and the visual fields were normal. There was a slight nystagmus on lateral deviation of the eyeballs to either side. There was no paralysis of the face or tongue. She drew back the angles of the mouth equally well on the two sides. There was a fine tremor of both hands on extension. The fingers were held in a somewhat peculiar position, about the same on the two sides. The biceps and triceps jerks were a little more prompt on the left side than on the right. The left knee jerk was more prompt than the right. The achilles jerks were about equal. There was no swelling of the ankles. She said that she felt pinpoint about equally well on the hand and on the two sides of the face. The neurologic examination appeared to indicate some organic brain lesion, but the manifestations were not definite. It was considered that the patient might have an encephalomyelitis, probably resulting from the previous spinal anesthesia, as these symptoms apparently developed from that time.

Fawcett[6] believes that paralysis of the sixth nerve may be accompanied by photophobia, headache, dizziness, hallucinations and tetanic contractures. He believes that extra-ocular muscle paralysis is a rare complication of spinal anesthesia and that the symptoms vary from three days to three weeks. MacLachlan[7] reports a case of disseminated encephalomyelitis following spinal anesthesia. Donovan, Beretervide and Rechniewski[8] have described a case of meningomyelitis following spinal anesthesia. Degenerative myelitis has been reported by Nonne and Demme.[9] Devraigne and his co-authors[10] had a case of quadriplegia following anesthesia. Evans[11] gives as a complication of spinal anesthesia meningism, purulent meningitis, neuritis, nausea and vomiting.

One may advance the theory that all spinal anesthesias produce an acute myelitis. This condition usually lasts a few hours and may leave the patient with complaints of pain and paralysis for a period, but there are times when there is a permanent involvement of the nervous system both clinically and pathologically. The fact that there may be certain definite residuals from this method of anesthesia must be recognized.

Falk,[12] Arnheim and Mage,[13] Koster[14] and others have reported death following spinal anesthesia. Usually it is believed that death occurring within a few minutes to a few hours following the puncture is due to the spinal anesthesia, but when it occurs several days later this is not considered to be the cause. However, rarely are the central nervous system complications given in these reports. When death is caused from the spinal anesthesia, it is usually attributed to the position in which the patient is placed following the injection, fall in blood pressure, or circulatory changes.[15] It is considered by many who use spinal anesthesia that the use of procaine hydrochloride and allied drugs results in no permanent damage to the central nervous system.

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[6] Fawcett, K. R.: Extra-Ocular Muscle Paralysis Following Spinal Anesthesia, Minnesota Med. **14:** 648-649 (July) 1931.

[7] MacLachlan, T. K.: Disseminated Encephalomyelitis Following Spinal Anesthesia, Brit. M. J. **2:** 11-12 (July 4) 1931.

[8] Donovan, [illegible] id Rechniewski, C.: Meningomielitis enun [illegible] a una raquianesthesia, Rec. Soc. de med. ir [illegible] 1928.

[9] Nonne, M., and Demme, H.: Degenerative Myelitis nach Spinal-Anästhesie, Wien. klin. Wchnschr. **41:** 1002-1005 (July 12) 1928.

[10] Devraigne, Suzor, and Laennec: A Propos de l'anesthèsie rachidienne; observation de quadriplegie après rachi anesthèsie guérie rapidement, Bull. Soc. d'obst. et de gynéc. **16:** 319 (May) 1927.

[11] Evans, C. H.: Spinal Anesthesia, New York, Paul B. Hoeber, Inc., 1929.

[12] Falk, H. C.: Deaths from Spinal Anesthesia, Am. J. Surg. **11:** 461-468 (March) 1931.

[13] Arnheim, E. E., and Mage, Sigmund: Spinal Anesthesia, Ann. Surg. **93:** 929-933 (April) 1931.

[14] Koster, Harry: Spinal Anesthesia, Am. J. Surg. **5:** 554-570 (Dec.) 1928.

In 1903, Spielmeyer[16] found involvement of the ganglion cells in that there was chromolysis, dissolution of the Nissl bodies and rounding of the cell bodies, also dissolution of the nuclear membranes. This was believed to be a circulatory disturbance. He also saw similar lesions in the large anterior cells of the spinal cord, so he believed there was a direct toxic effect on the axis cylinders with secondary degeneration of the ganglion cells. The most intense reaction was present in the nerve fibers in the anterior column of the cord. Brunn,[17] in 1922, noted swelling of the nucleus of the ganglion cells and wandering toward the periphery after spinal anesthesia. These changes were visible after the cessation of anesthesia. Davis and his associates,[18] in 1931, working with dogs, found that the spinal anesthetic solutions in common use today were hemolytic as well as myelitic and would seem to act on the myelin of the nerve fibers as they do on the lipoids of the red blood cell membranes, causing its dissolution. He noted varying degrees of inflammatory reaction in the leptomeninges, passive changes in the ganglion cells of the gray matter of the cord similar to those seen in retrograde or so-called wallerian degeneration, swelling and fragmentation of the axis cylinders, and also signs of degenerative changes in the fiber tracts of the spinal cord.

CONCLUSION

I have attempted to show the clinical changes during and following spinal anesthesia and some of the sequelae and complications. There have also been reported two cases in which death occurred several days following the anesthesia, with pathologic observations. It appears that the anesthesia was a contributing cause for the deaths. The permanent effects of the drug were seen at necropsy. In the last case, the spinal cord was noted to be normal in the cervical region, and in the lower dorsal and lumbar regions definite pathologic changes were noted. It has been said by several observers that there is no irritation in the nervous system following the injection of procaine or its allied drugs and they compare this finding with irritation produced by the inhalation method on the mucous membranes of the bronchi and lungs. However, I feel that there is a definite toxic effect on the spinal cord and the spinal nerve roots, which shows its effect both clinically and pathologically, the patients usually complaining of pain, and this finding can be explained by the pathologic study of the nerve roots.

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15. Seevers, M. H., and Waters, R. M.: Circulatory Changes During Spinal Anesthesia, California & West. Med. **35:** 169-173 (Sept.) 1931.
16. Spielmeyer, W.: Veranderungen des Nervensystems nach Stovainanasthesie, Munchen. med. Wchnschr. **55:** 1629-1634, 1908
17. Brunn, von, Max: Die Lumbal anasthesie in Neue deutsche Chirurgie, Stuttgart **29,** 1922.
18. Davis, Loyal; Haven, Hale; Givens, J. H., and Emmett, John: Effects of Spinal Anesthesia on the Spinal Cord and Its Membrane, J. A. M. A. **97:** 1781-1785 (Dec. 12) 1931.

The Asbestosis Body.—During the past two or three years, observations on the asbestosis body have been published with such frequency that it is very difficult to keep track of them all. . . . The first illustrations of the bodies were given by Cooke and Hill in their original description. Subsequently they were depicted by Simson in autopsies of South African cases. His paper also included a microphotograph of the bodies produced experimentally in the lung of the guinea-pig by Mavrogodato, the first occasion on which the bodies had been produced experimentally.—Gloyne, S. R.: *Lancet* **1:**1351 (June 25) 1932.

Clinical Notes, Suggestions and New Instruments

PLACENTAL FRAGMENT ENGRAFTED IN CERVICAL LACERATION

Jack D. Parker, M.D., Greenville, S. C.

Rarity alone warrants the report of a case in which a fragment of placental tissue becomes grafted in a cervical laceration. This placental fragment, 3 by 5 cm. in size, thrived for nearly a year after the establishment of its blood supply from the newly torn cervix. After a search of all available literature, I am unable to find that this unusual condition has been previously reported.

REPORT OF CASE

Mrs. J. E. T., aged 26, white, seen, Sept. 2, 1931, complained of vaginal bleeding, weakness and headaches. The present illness began ten months before with vaginal bleeding similar to a menstrual flow, though more profuse, which was present from fourteen to eighteen days out of each month. Since the onset the patient had lost 16 pounds (7.3 Kg.) and had rather severe dyspnea and palpitation of the heart. She had been confined to bed for the past month. Two months prior to the onset of the illness she stated that she had delivered normally a 10 pound (?) baby. The puerperium was uneventful, and she stated that her postdelivery lochia was of normal character, duration and amount, and similar to that experienced after each of her three preceding deliveries.

The patient had had the usual diseases of childhood without complications. The menstrual periods had always been regular before the present illness, with a duration of three or four days, without pain, and with an average amount of flow. One miscarriage occurred six years before, without complications. The history, other than as noted, was negative.

The patient was markedly anemic and emaciated, and she was very weak and dyspneic. The pulse was 120, the temperature 98. For brevity, I shall only mention the abdominal, pelvic and laboratory observations, the others being of no particular importance in this report.

There was generalized abdominal tenderness to palpation, most marked over the uterus. There were no masses palpable, no muscle rigidity, nor free fluid.

There was a bloody vaginal discharge. The Bartholin glands were not palpable. No pus was expressed from the urethra. The perineum was moderately relaxed. There were no labial ulcers. A firm mass, 3 by 5 cm., was felt protruding from the cervical canal. The uterus was of normal size, freely movable, in normal anteflexed position, and of normal consistency. Both fornices were normal, as was the culdesac. Visualization of the mass by means of a speculum revealed that it was angiomatous and was attached in an old cervical laceration. The slightest manipulation of the mass caused free bleeding both from the mass and from its site of attachment.

The red blood cell count was 2,872,000; hemoglobin, 58 per cent (Sahli), 8 Gm. per hundred cubic centimeters.

Examination of the urine revealed albumin, two plus; pus and blood, four plus.

The patient was immediately sent to Greenville City Hospital and matched for transfusion. She was given 500 cc. by the direct method. The following day, nitrous oxide anesthesia was administered and the mass was removed from its attachment to the cervical tear. There had been established a very good blood supply, and free bleeding followed from the raw cervical site of attachment. It was then, for the first time, evident to the operator that the mass was a placental fragment that had become grafted in a cervical laceration. The cervix was then slightly more dilated, being already partially dilated by the presence of the mass, and gentle curettement of the uterus was performed. Two small fragments of placental tissue were removed. The cervix was then cauterized, the vagina packed, and the patient returned to her room. After two or three days, all sanguineous drainage ceased. A ravenous appetite continued during the patient's stay of seven days in the hospital, and she was discharged feeling much stronger. The red cell count was 3,570,000, an increase of 700,000 in the seven days.

She was next seen four weeks later at the office, feeling fine, hemoglobin 85 per cent, and reporting a gain of 7 pounds (3.2 Kg.) in weight. She had had one normal menstrual period since her dismissal from the hospital, but no other bleeding. Pelvic examination was negative, and the cauterized cervix exhibited a very satisfactory appearance.

COMMENT

It was my opinion at first that this was an angiomatous polyp, although the possibility of a malignant lesion had to be considered. It was not until the mass was removed that the tissue was definitely known to be placental. As unusual as it might seem, there is no doubt about the viability and blood supply of this tissue, which the pathologist reported placental, and the fact that it was firmly attached in the cervical tear. The logical explanation of the occurrence is that the fragment, in its passage from the uterus, was grasped in a lacerated and contracting cervix, and followed the usual course of skin grafts.

Woodside Building.

HERPES ZOSTER AND TUBERCULOSIS OF THE SPINE

THEODORE ROSENTHAL, M.D., NEW YORK

The observation of a patient with typical herpes zoster who, sixteen months later, proved to have tuberculosis of the spine involving the same segments implicated in the zoster stimulated my interest in this subject. Mention of similar instances in the literature is indeed scanty. Standard textbooks on orthopedic surgery do not cite herpes zoster as an accompaniment or complication of tuberculosis of the spine. One work on neurology[1] states that herpes zoster may occur in caries of the spine, but recent dermatologic and orthopedic literature contains no reference to it.

REPORT OF CASE

Mrs. E. L., aged 46, white, born in Minnesota, had had no pregnancies and no miscarriages. She had always enjoyed good health. The family history was negative for tuberculosis.

In April, 1930, when I first saw her, she complained of a painful eruption in the left armpit. She presented numerous grouped vesicular lesions extending from a point just below the angle of the left scapula around to the left anterior part of the chest, and following the course of the intercostal nerves. The area involved corresponded fairly well with the seventh dorsal dermatome.

The lesions were tense, contained clear fluid, varied in size from pinhead to split pea, and were situated on erythematous bases. A diagnosis of herpes zoster was made, soothing antipruritic lotions were applied locally, and amidopyrine was given internally. One week later the lesions were crusted for the most part, and the patient felt very much better. She was told not to return, as she was considerably improved.

The patient was not seen again until January, 1932. At this time she complained of intense pain in the back, which she had had for several months. The pain was remittent in character, sharp, usually localized to the back, in the dorsal region, and occasionally radiating around to the lower part of the chest anteriorly, either unilaterally or bilaterally.

Following the involution of the zoster, the patient stated that she had been well until about eight months before her return, at which time the pain had commenced. She had grown worse progressively until she was unable to attend to her household duties, when she was forced to seek medical advice again.

At this time the patient was well developed but had the appearance of being chronically ill and appeared to be poorly nourished. The fingers of both hands showed enlarged and deformed interphalangeal joints. The pupils were equal, were regular, and reacted well to light and in accommodation. The knee jerks were hyperactive and the Romberg sign was negative. There was considerable pain on pressure in the middorsal region of the spine, with pain and limitation of motion on any movement of the spine. Blood Wassermann and urine examinations were negative.

The clinical picture strongly suggested disease of the spine, and the spine was therefore examined roentgenographically. The radiologist reported finding deformity and apparent fusion of the bodies of the seventh and eighth dorsal vertebrae, with complete obliteration of the intervertebral space between these two vertebrae, and stated that the appearance was characteristic of a tuberculous process involving the seventh and eighth dorsal vertebrae.

The occurrence of herpes zoster in the acute infectious diseases, and also in pulmonary tuberculosis is fairly well known. In 1879, Potain[2] said that the eruption sometimes appears as the precursor of tuberculosis (cette eruption parait quelquefois comme le prélude de la phtisie pulmonaire). Bärensprung[3] also pointed out many years ago that herpes zoster is common in pulmonary tuberculosis.

Rendu,[4] Huchard[5] and Magnüsson[6] have reported more recently instances of herpes zoster occurring in patients with phthisis. Bernardeau[7] observed a man with herpes zoster of the lumbosacral region who several weeks later developed tuberculosis of the bone. Conor[8] reported a case of acute tuberculous orchitis in a soldier who subsequently developed herpes zoster of the right intercostal region.

Barbier and Lian[9] and Loeper[10] observed cases of herpes zoster in children and adults suffering from tuberculosis elsewhere in the body and concluded that in these cases it was due to a posterior ganglion radiculitis of tuberculous origin.

The appearance of herpes zoster in surgical tuberculosis is less well known and has been commented on chiefly by the older observers.

E. Wagner[2] published a case report in 1870 of a man, aged 23, in whom, eight days before he died of pulmonary tuberculosis, a left intercostal herpes zoster developed involving the ninth and tenth intercostal nerves. At necropsy, tuberculosis of the last six dorsal and the first two lumbar vertebrae was found.

Dubler[11] reported an observation in a woman, aged 77, who complained of a right-sided thoracic zoster, extending from the seventh to the ninth ribs. Six months later it was found that she had a caseous periostitis of the seventh, eighth and ninth ribs on the right side.

Head and Campbell[12] mention three cases in which an outbreak of zoster corresponded with renewed activity of the tuberculous process in the spine.

In about half of all the cases recorded in the literature in which cases of herpes zoster came to necropsy and pathologic changes were found in the internal organs, an association of this disease with tuberculosis was observed. Thus, Arnstein,[13] in postmortem examination of thirty-six cases of herpes zoster, found evidence of tuberculosis in seventeen cases. Head and Campbell in their series of twenty-one necropsies, found tuberculous changes in ten cases.

The etiology of herpes zoster is still uncertain, and a discussion of it, in any event, is out of place in a report of this nature. Suffice it to say that there is almost universal agreement on a division of this condition into two types. The first, and probably the most common type, is looked on as a disease *sui generis*, an acute infection which has certain similarities and possibly relationship to epidemic encephalitis and varicella.[14]

The second type, or symptomatic zoster, resembling in all respects that arising spontaneously, may be produced by implication of a posterior root ganglion in inflammatory processes secondary to a malignant condition, tuberculosis or injury.

The case described herein is an example of the second type, in which undoubtedly there was a tuberculous infection of the posterior root ganglions adjacent to the seventh and eighth dorsal vertebrae. The involvement of the dermatome, or metameric skin region, corresponding to the dorsal roots implicated in the carious process in this instance, is noteworthy and of considerable clinical interest.

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[1] Wechsler: Clinical Neurology, Philadelphia, W. B. Saunders Company, 1927, p. 272.

[2] Quoted by Conor (footnote 8).

[3] Bärensprung, quoted by Magnüsson (footnote 6).

[4] Rendu: Abstr. Monatsch. f. prakt. Dermat. **19:** 572, 1894.

[5] Huchard: Abstr. Monatsh. f. prakt. Dermat. **19:** 572, 1894.

[6] Magnüsson, S.: Tubercle **6:** 482 (July) 1925.

[7] Bernardeau: Abstr. Dermat. Wchnschr. **56:** 660, 1913.

[8] Conor: Gaz. d. Hôp. de Paris **79:** 639, 1906.

[9] Barbier and Lian: Progr. méd. **30:** 361, 1911.

[10] Loeper: Abstr. Rev. neurol. **23:** 699, 1912.

[11] Dubler: Virchows Arch. f. path. Anat. **191:** 195, 1884.

[12] Head and Campbell: Brain **23:** 353, 1900.

[13] Arnstein: Wien. Arch. f. inn. Med. **4:** 442, 1922.

[14] Roxburgh, A. C.: Brit. J. Dermat. **39:** 13 (Jan.) 1927.

One may safely conjecture that if the full possibilities of this symptom complex had been realized at the time the patient exhibited the zoster, and the proper examinations made, the spinal disease would have been demonstrated. This early diagnosis, or at least a diagnosis established sixteen months earlier, would have been of incalculable importance to the patient.

SUMMARY AND CONCLUSIONS

1. A woman, aged 46, showed signs of tuberculosis of the spine sixteen months after an attack of herpes zoster. The carious vertebrae corresponded to the spinal segments involved in the zoster.
2. From a review of the literature, there seems to be a definite association between herpes zoster and tuberculosis, proved clinically and pathologically.
3. In view of this relationship, it might be well, in the future, to bear these facts in mind when seeing patients with herpes zoster.

115 West Eighty-Sixth Street.

KEROSENE POISONING IN CHILDREN

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Kerosene poisoning is a rare condition in children, or at least it is a condition that is rarely reported in the literature. This is rather surprising since kerosene is still used in a great many households, especially in rural communities, and careful precautions are not always taken to keep it out of reach of small children.

During the past two years I have seen four cases of children who drank kerosene. One experienced no untoward effects, one went into an immediate collapse from which there was rapid recovery, one had considerable respiratory difficulty for eighteen hours with subsequent recovery, and one died.

REPORT OF CASES

Case 1.—B. J., a colored girl, aged 1 year, while playing around the house found a tin can containing kerosene, from which she drank. Crying and a slight coughing attracted the mother's attention, and the child was brought to the hospital. On admission, an hour later, the baby appeared to be perfectly normal. The pulse was good, the respirations were normal, there was no evidence of cyanosis, and no burning of the mouth or throat. The stomach was washed out and the gastric content showed considerable kerosene. A laxative was administered. The subsequent course was uneventful and the child seemed to have no ill effects whatever from her drinking episode.

Case 2.—H. M., a white boy, aged 2 years, while playing on the beach, where the family was spending the summer, found a bottle containing kerosene and drank from it. His coughing attracted attention. Within ten minutes he had gone into a state of collapse. There was no doctor in the community and a trained nurse staying near by rendered first aid. The stomach was washed out and magnesia magma was administered through the tube. At that time the skin was cold and clammy, the lips cyanotic, the pulse weak, and the child was in coma. An immediate start was made for the hospital, a three hours' drive.

By the time of admission, the child had regained consciousness. The pulse was rapid but strong, the respirations were slightly labored, and there was a mild degree of cyanosis. Caffeine was administered and external heat applied. Within twelve hours the child appeared to have recovered entirely, the pulse was normal, and normal color had returned. He was kept under observation for thirty-six hours and discharged in excellent condition. No further trouble ensued.

Case 3.—P. H., a white boy, aged 18 months, while playing in the yard of a neighbor, picked up a tin cup containing kerosene and drank from it. Just how much of the fluid was swallowed is not known, although he probably took two or three mouthfuls. Rather severe coughing attracted attention and he was taken to the office of the family physician immediately. There his stomach was washed out and magnesia magma was given. The baby seemed somewhat sleepy following this procedure and the breathing was labored, so he was brought to the hospital.

On admission the child was stuporous. The lips were somewhat cherry red, and the breathing was stertorous and more labored than normal. The mouth and throat showed signs of a mild irritation. The pulse rate was accelerated but of good volume. The lungs were clear throughout to percussion and auscultation.

The child was kept under observation. The temperature gradually rose, and seven hours after admission it had reached 102.2 F. The breathing became more labored, although there was no indication on examination of any trouble in the lungs. The symptoms subsided rapidly, however, and within eighteen hours the temperature was normal, the breathing was natural and the child frolicked and played in his usual manner. He was discharged and showed no ill effects from his recent gastronomic indiscretion.

Case 4.—L. M., a white boy, aged 11 months, while playing around the house one afternoon, picked up a container holding kerosene and started to drink. Immediately he began to cough and attracted the attention of the nurse. He was rushed to the office of the family physician, where sweet cream was given, followed by an emetic. The child vomited and the stomach contents were carefully examined, but little kerosene was found. An hour later he was moved to a hospital in a neighboring town. The stomach was washed out. The child was in a state of mild collapse, but following the administration of caffeine and atropine, normal color was restored, although the child was still very restless and was having difficulty with respiration. There was little change during the night. The following morning the child refused fluids by mouth, so rectal feeding was attempted, but unsuccessfully. Dextrose solution was given intravenously. By noon the child had become very restless and somewhat cyanotic; codeine was used as a sedative. Dextrose was given intravenously during the afternoon, and hot sponges were used to stimulate the peripheral circulation.

At 3 o'clock the next morning there was a sudden change for the worse. The house physician was called and found a crackling subcutaneous emphysema over the entire chest wall and neck. The respirations had become a great deal more labored. Moist râles were heard over the entire left chest. In spite of all stimulation, the child became weaker and weaker. I saw the child in consultation during the afternoon, at which time he was breathing his last. The pulse was rapid and weak, the lips and extremities were cyanotic. A crackling subcutaneous emphysema could be felt over the entire upper chest and lower neck. The respirations were gasping in type, and moist râles could be heard over the entire left chest. The baby died within half an hour.

Unfortunately, consent for autopsy could not be obtained. The body, however, was examined under the fluoroscope. Both lungs were filled with splotchy shadows, apparently a terminal bronchopneumonia. There was a pneumothorax approximately 2 inches in width between the left lower lobe and the diaphragm.

COMMENT

From these four cases it can be seen that there is no constant picture accompanying the drinking of kerosene. One factor that must be taken into account, as pointed out by Sollmann,[1] is the toxicity of the ingested kerosene, for the toxicity will vary directly in proportion to its content of volatile products. Thus, in case 1 the kerosene must have been of very low toxic nature as compared with that in case 2. In the first case there was an interval of an hour following the drinking before any treatment was attempted, and at the end of that time kerosene was still present in the stomach, yet there were no untoward effects. In the second case, collapse ensued within ten minutes.

A second factor that must be considered, one that plays a major part in determining the prognosis, is the amount of kerosene that is aspirated during the act of drinking. Poisoning directly by inhalation has been for the most part industrial or accidental[2] and has occurred in adults. The involvement of the respiratory tract in children (cases 3 and 4) is undoubtedly through aspiration of the liquid with vaporization following as the kerosene is warmed by the heat of the body. Although the boiling point of kerosene is between 150 and 300 C., at body temperature the lower hydrocarbons, which are present in all but the purest kerosenes, probably vaporize and produce damage. Although I can find no previous discussion of this phase of the poisoning, I can see no other method of explaining the lung involvement except in terms of primary aspiration with secondary irritation of the respiratory tract from the kerosene itself and from the vaporization of the lower hydrocarbons. In case 3 there was irritation of the larynx and probably of the upper trachea; this, I believe, was due to the local action of the kerosene. In case 4 there was in addition a terminal involvement of the lungs, which must have been caused by the vaporized volatile lower hydrocarbons.

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[1] Sollmann, T. H.: Manual of Pharmacology, ed. 3, 1926.

The pathologic changes in the fatal cases vary.[3] In some cases reported the postmortem examination has been practically negative; in other cases there has been hyperemia and small hemorrhages in the gastro-intestinal tract and slight changes in the kidneys; also hemorrhages into the lungs and some hemolysis have been described. It is unfortunate that no autopsy could be obtained in case 4, in which there was evidently a terminal bronchopneumonia. I am unable to explain the pneumothorax and subcutaneous emphysema in this case. Whether the rupture was produced by coughing or by direct action of the volatile substances it is impossible to say, although the latter method would seem highly improbable.

The symptoms are variable, depending on the type and amount of kerosene taken, and may be divided into three groups: symptoms following the ingestion of the poison, those associated with inhalation, and those which follow aspiration, although these groups of symptoms will naturally overlap in some cases.

When kerosene is ingested, the first symptoms are those of irritation of the alimentary tract, burning pain in the mouth, throat and stomach, colicky pains in the abdomen, vomiting, thirst, and later painful micturition. If there are many volatile products in the kerosene and they become absorbed, more serious symptoms develop: drowsiness, cyanosis, shallow respiration, feeble pulse and coma. These more severe manifestations of the poisoning may come on within a short time (case 2). Fortunately, death is rare. Barbour[4] has stressed the presence of a bright cherry red color of the lips in these cases, a condition which I observed in one of my cases. He also found that the blood spectrum showed methemoglobin.

In those patients, usually adults, who absorb the poison through inhalation, the symptoms "resemble those of mild alcoholic intoxication, constituting the so-called 'naphtha jag,' lack of self-control being a prominent symptom, and excitement. These effects are followed by depression, headache, nausea, roaring in the ears, irritation in the throat, trembling in the hands and arms. In the more severe cases, signs of respiratory failure appear, the patients become pale, the lips livid, respiration slow, heart weak and feeble, followed by insensibility, convulsions, and death from respiratory failure."[2]

The third group of symptoms are those found in patients who aspirate the fluid. The course of events is probably as follows: The person drinking the fluid feels a burning sensation in the mouth and throat. Spitting, gasping and coughing follow, during which a certain amount, large or small as the case may be, is aspirated. If some of the liquid is swallowed, the symptoms described may ensue. The aspirated fluid sets up a local irritation of the epiglottis, larynx and trachea, with resulting difficulty to respiration. Through direct extension of the kerosene or through the action of the volatilized products, the irritation may extend down into the lung, resulting in a generalized congestion of the lungs and probably bronchopneumonia, with the usual symptoms of these conditions.

The diagnosis can be made only from the history, from the smell of kerosene on the breath, or from the presence of demonstrable kerosene in the gastric content.

The treatment is unsatisfactory. There is no known antidote for kerosene. The stomach should be washed out at once and a mild laxative administered. Otherwise the treatment is symptomatic. Stimulants should be used freely when indicated. The patient should be kept under close observation for at least twenty-four hours, and any symptoms of involvement of the gastro-intestinal or respiratory tracts and of the central nervous system carefully noted. In severe cases Barbour[4] suggests blood letting and blood transfusion to rid the body of methemoglobin.

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[2] Webster: Legal Medicine and Toxicology, Philadelphia, W. B. Saunders Company, 1930.

[3] Gasoline (Petroleum Benzin) and Kerosene (Coal Oil) Poisoning in Children, Queries and Minor Notes, J. A. M. A. 89: 1169 (Oct. 1) 1927.

[4] Barbour, Orville: Kerosene Poisoning, J. A. M. A. 87: 488 (Aug. 14) 1926.

Special Article

VITAMIN D

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CHICAGO

[Editorial Note.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.

A summation of the advance in knowledge of vitamin C was contained in a paper by Dr. Alfred F. Hess published in The Journal, April 23, page 1429, which paper was a part of this series.]

The discovery of the fourth vitamin, vitamin D, has been of the greatest importance to the medical profession as well as to mankind, because it has brought about the solution of the century-old problem of the cause and prevention of rickets. Today, because of this discovery, severe rickets, in civilized countries at least, is coming to be a rare disease. The opinion has even been expressed that within the next decade, or even sooner, the disease in all its forms may be almost completely eradicated; that it will become as rare as has infantile scurvy since the widespread use of orange juice.

To the English physiologist Mellanby belongs the credit of the discovery of the specific antirachitic factor or vitamin. His reports, published in 1918 and 1919, contain the first accounts of the undoubted production of true rickets in an experimental animal—in this case the dog—and of its cure by dietary means.

On diets consisting chiefly of cereal and small quantities of whole or skim milk, diets which are now recognized as deficient in vitamin D and also in calcium, there developed in Mellanby's puppies soft bones, bowed legs and other typical deformities seen in rachitic children. More definite proof of the presence of true rickets was obtained from roentgenograms and from chemical analysis of the dogs' bones, which were found to have a decidedly low calcium content. When a few cubic centimeters of cod liver oil was added to the diet, rickets failed to appear. Comparatively large amounts of butter fat and suet prevented it to some degree, but lard, cottonseed, olive and linseed oils proved entirely ineffective. Here was proof positive that the cause of rickets was to be found in a definite deficiency in the diet and that the cure lay in the addition of certain specific foods to the ration.

DISTINCTION BETWEEN VITAMINS A AND D

Since the fats that were most potent in the prevention of rickets, cod liver oil and butter fat, were also rich sources of the already known vitamin A, Mellanby drew the conclusion that the antirachitic factor was probably identical with fat-soluble A. But because of certain conflicting experimental results of their own, American investigators were not willing to accept this interpretation, and in 1922 McCollum and his co-workers at Johns Hopkins University published definite proof of the existence of two separate and distinct fat-soluble vitamins. Taking advantage of the fact, already established by Hopkins in England, that vitamin A is readily oxidized, McCollum and his associates passed a stream of oxygen through cod liver oil which was held at the temperature of boiling water for from twelve to. fourteen hours. At the end of this time they found that the oil still retained its antirachitic potency when fed to rats but had lost its power to cure xerophthalmia; in other words, it still contained the antirachitic factor but had lost its vitamin A. This antirachitic factor McCollum named vitamin D.

RELATION OF VITAMIN D TO ULTRAVIOLET RAYS

For a number of years there had existed a more or less vague opinion that the incidence of rickets was in some way connected with sunshine, fresh air and other hygienic factors in the child's environment. That ultraviolet radiation constituted a specific cure for rickets, however, was first definitely established by Huldschinsky, a German physician working in Berlin during and directly after the World War.

For some time scientists were puzzled to reconcile these two discoveries, that of a specific antirachitic factor in the food and that of the antirachitic action of ultraviolet rays. But the riddle was solved independently and almost simultaneously by Hess of New York and by Steenbock of Wisconsin, who announced in 1924 that antirachitic potency could be developed in a number of different biologic materials by exposure to the rays of a mercury vapor quartz or a carbon arc lamp.

Further investigation developed the fact that the substance in the food or other material which was activated by ultraviolet radiation was not a fat but a substance associated with fats, an obscure sterol called ergosterol. Up to this time this sterol was but little known and had been considered to have no biologic significance. Later work has shown that ergosterol has a wide distribution in plant and animal tissues, although it is usually found in minute quantities only, considerably less than 1 per cent. It is found in larger amounts in ergot, from which it gets its name, and in yeast. These two plants now constitute the chief commercial source of supply. Particularly interesting is the discovery that ergosterol exists in minute but measurable quantities in blood and in human skin. Kuester and Horth have recovered about 1.5 mg. of ergosterol per liter from the blood of a steer, and Hentschel and Schindel report that the sterols obtained from human adult skin contain 0.42 per cent of ergosterol, while those from infant skin contain 0.15 per cent.

The probable explanation of the antirachitic action of ultraviolet radiation is that the radiation forms vitamin D from the ergosterol in the skin. The vitamin is then absorbed into the blood and carried to the tissues where it is needed. Such an explanation is supported by several lines of evidence. In the first place, Hess, in 1925, showed that skin, both human and calf, though originally inert, could be made highly active by irradiation with ultraviolet rays. That vitamin D could be absorbed through the skin was shown by Hume, Lucas and Smith, who removed the hair on small areas on the bodies of rabbits and rats, and painted them with irradiated cholesterol, which is now known to contain irradiated ergosterol. The areas selected were inaccessible to the animals and were further protected by a chamois jacket which kept the animals from getting the irradiated substance into the mouth. Enough vitamin D was absorbed through these areas to protect the animals from rickets, although they were fed a severe rickets-producing diet.

Other work with rachitic babies has shown that massaging the skin with cod liver oil or with irradiated oil may bring about a cure.

It is possible that the ultraviolet rays may penetrate the skin sufficiently to reach the ergosterol in the capillary blood. However, a recent report from China indicates that in all probability the activation of ergosterol takes place in the skin and not in the blood. In the experiment reported, it was found that rachitic rats could be cured by the irradiation of a small area of shaved skin on the back, or of the outer surface of the normal ear. If the skin surface was thoroughly cleaned with ether immediately before the irradiation, however, only slight healing took place. Also, if the blood circulating in the vessels of the ear was exposed to the ultraviolet rays, healing did not occur. This, Hou believes, is strong evidence that the seat of activation is the sebaceous secretion of the skin.

In this connection, it should be mentioned that pigmentation of the skin reduces its permeability. Macht found that Negro skin is less permeable than white, and Hess found that black rats required more ultraviolet radiation to protect them from rickets than white ones. But both Negro babies and black rats can be protected from rickets by ultraviolet radiation if it is of sufficient intensity.

INFLUENCE OF VITAMIN D ON CALCIUM AND PHOSPHORUS METABOLISM

The exact method by which vitamin D exerts its influence on calcium and phosphorus metabolism is by no means clearly understood. Nevertheless, some of its effects on certain broad phases of mineral metabolism are well recognized. Among these are the retention of calcium and phosphorus in the body as a whole, the concentration of calcium and phosphorus in the blood, and the deposition of calcium and phosphorus in the bones.

Calcium and Phosphorus Retention.—Unquestionably, one of the effects of small or moderate amounts of the antirachitic factor is to increase the amount of calcium and phosphorus retained in the body on any given diet. This fact has been established by many so-called balance experiments, the purpose of which is to compare or balance the intake of the two minerals against the total output of each. Such experiments have been carried out both on children and on animals and are too numerous to quote in detail, but certain outstanding results may be referred to.

The great majority of balance studies on rachitic children were carried out in Germany prior to the World War. The results of these studies show that the rachitic infant stores much less calcium and phosphorus in his body than does the normal child.

That cod liver oil might bring about a remarkable improvement in the mineral balance, that is, greatly increase the amount of calcium and phosphorus stored by the baby with rickets, was demonstrated by Schabad more than twenty years ago, several years before Mellanby's discovery of the antirachitic factor. In the particular case studied, the calcium balance was increased from + 0.067 to + 0.465 Gm. of calcium oxide, and from + 0.116 to + 0.417 Gm. of phosphorus pentoxide when cod liver oil was given.

More recently, Orr, Holt, Wilkins and Boone have observed that the mineral retention of rachitic children could be greatly increased either by treating them with light from a mercury vapor quartz lamp or by feeding them irradiated milk.

More important for the average child is the fact that normal, that is, nonrachitic, infants will also store more calcium and phosphorus when cod liver oil or some other source of vitamin D is fed. Within recent years a series of seventy-four metabolism experiments has been carried out on apparently normal, but artificially fed, infants by Dr. Amy Daniels of the Child Welfare Research Station and the Pediatric Department of the University of Iowa. In every case, Dr. Daniels found that both calcium and phosphorus retention were greatly improved by cod liver oil, irradiated milk or irradiated olive oil. A few typical results selected from her very complete tables are given in table 1:

Table 1.—*Calcium and Phosphorus Retention in Nonrachitic Infants on Cow's Milk Mixtures, With and Without Added Vitamin D*

Children			Calcium			Phosphorus		
				Retention			Retention	
Age, Mo.	Number	Type of Feeding	Intake, Gm.	Total Gm.	Per Kg. Gm.	Intake, Gm.	Total Gm.	Per Kg. Gm.
6	9	Pasteurized milk; no cod liver oil	0.89	0.025	0.0042	0.72	0.045	0.0075
4	4	Pasteurized milk plus cod liver oil	0.78	0.186	0.031	0.64	0.180	0.030
5	5	Irradiated milk plus cod liver oil	0.84	0.272	0.040	0.66	0.136	0.020
4	2	Irradiated olive oil	0.79	0.288	0.045	0.63	0.202	0.032

The experiments on children have received abundant confirmation in work on animals, including dogs, rats, goats and pigs. One of the most interesting of these experiments is that performed by Shohl and Bennett on dogs fed a diet similar to that used by Mellanby in his pioneer work. Two dogs in which severe rickets developed were found to be retaining considerably less than half of the calcium which they ate, while a third dog, which received the same diet with cod liver oil added, was keeping in its body more than three fourths of the calcium in its food.

The question "Why does vitamin D increase mineral retention?" is often asked but so far has not been satisfactorily answered. Since both calcium and phosphorus are excreted largely through the intestinal wall as well as through the kidney, it is difficult, if not impossible, to say whether the increased retention is due to an increased absorption of mineral or to a decreased excretion. A third possible factor might be the deposition of greater amounts of calcium and phosphorus in the bones. In all probability the vitamin does not exert its influence in any one direction but to some extent in all three directions.

Evidence for increased absorption lies in the fact that very large quantities of both calcium and phosphorus are found in the feces of rachitic children, while very small amounts are found in the urine. When vitamin D is given, the usual result for both rachitic and normal children is that much less of the mineral is found in the feces and more in the urine. The smaller amounts in the feces, however, might be the result of a lowered excretion as well as of an increased absorption.

Further evidence for increased absorption will be discussed in the next section.

Concentration of Calcium and Phosphorus in the Blood.—The power of the antirachitic factor to control the concentration of calcium or of phosphorus in the blood is now widely recognized. An early and important sign of rickets in babies is a low concentration of inorganic phosphorus in the blood, a concentration of 2 or 3 mg. per hundred cubic centimeters of serum instead of the normal 5 to 6 mg.

Treatment with cod liver oil, ultraviolet rays, irradiated ergosterol or any other of the antirachitic agents results in a prompt rise to normal values. In infantile tetany, which may accompany rickets or may occur spontaneously, the blood calcium is considerably diminished. In this disease, also, antirachitic treatment quickly restores the normal concentration of the blood.

Even nonrachitic babies show a seasonal variation in blood phosphorus which corresponds to differences in the amount of sunlight they receive. In the late spring and summer, when the babies are outdoors and the sunlight is rich in ultraviolet rays, the inorganic phosphorus is at its height. In the darker months of late fall, winter and early spring, when the sunlight contains little, if any, of the ultraviolet, the blood phosphorus may sink almost to rachitic levels.

One of the most recent and very striking demonstrations of the part played by vitamin D in the elevation of the blood phosphorus is the work of the German investigator Warkany. It is well known that the feeding of inorganic phosphates by mouth or their injection parenterally results in a temporary rise in the concentration of phosphorus in the blood. Warkany first measured the increase which could be produced in the blood of normal rabbits by feeding standardized doses of sodium diphosphate (0.5 Gm. per kilogram of body weight). The increase above fasting values, which proved to be surprisingly constant, reached its height in from one to three hours and from then on declined, until it had entirely disappeared in from six to seven hours. A very definite curve of phosphorus values could be drawn, which Warkany called the phosphatemic curve. When the rabbits were given rather large doses of irradiated ergosterol from twenty-four to forty-eight hours before the phosphate was fed, the average rise in blood phosphorus was doubled or, more often, trebled.

Nonrachitic babies reacted in the same way as the rabbits had done, showing approximately the same increase in blood phosphorus with equivalent doses of the sodium salt. Feeding inorganic phosphate to rachitic babies, however, resulted in practically no increase in the blood phosphorus until after antirachitic treatment was begun, when the phosphatemic reaction rapidly became normal or greater than normal.

In order to discover whether the blood calcium would be similarly influenced by irradiated ergosterol, Jones and Rapoport of the University of Pennsylvania School of Medicine have repeated Warkany's experiments on dogs, using standard doses of calcium salts instead of the disodium phosphate. When a soluble calcium salt (calcium gluconate) was fed, 0.1 Gm. of calcium per kilogram of body weight produced only a slight rise in the blood calcium. After the dogs had been given irradiated ergosterol, however, the same amount of calcium salt produced a much greater rise in the blood calcium.

When calcium and phosphorus were fed together, in chemical combination as the insoluble dicalcium phosphate, the results were disappointing, because there was no marked increase in either calcium or phosphorus in the blood.

Conceivably, vitamin D might bring about increases in blood calcium and phosphorus either by increasing the absorption of minerals from the intestine or by decreasing excretion through the kidney or intestine, or both. Unfortunately, neither group of investigators has measured the calcium or phosphorus in the feces during the course of the experiments. Warkany, however, has measured the urinary phosphorus of rabbits simultaneously with the determination of the phosphatemic curve and finds that the urinary phosphorus is increased tenfold after irradiated ergosterol is given. He believes it highly unlikely that this phosphorus could have come from the tissues but thinks it must be the result of increased absorption from the tract.

That another mechanism must be involved, however, is indicated by the work of another German investigator, Heymann, who found that similar increases in the blood phosphorus occurred when irradiated ergosterol was given parenterally. Here, of course, the factor of intestinal absorption is eliminated. Evidently vitamin D increases the capacity of the blood to hold phosphorus, possibly by raising the level at which it begins to be excreted.

Relation of Calcium to Phosphorus in the Blood.—The Ca × P product: Certain investigators believe that the relation of calcium to phosphorus in the blood, or the calcium × phosphorus product, is more important from the standpoint of normal calcification of the bone than is the individual concentration of either one alone. Howland and Kramer, who first established average figures for blood calcium and phosphorus in both normal and rachitic children, believe that the relation between the two is of considerable significance.

Normal children or animals, with approximately 5 mg. of inorganic phosphorus and 10 mg. of calcium, have a calcium × phosphorus product of about 50. In rickets the product is almost always low. Kramer believes that a product under 30 always means active rickets, that healing begins when the product reaches 40 or above, and that healed rickets is usually characterized by products above 50.

Recently Kramer, with his associates Shear and Siegel, reported the results of an extended series of experiments which support this theory. This investigation included work with 350 rats in which the changes in the calcium × phosphorus product and the first evidences of calcification of the bone after antirachitic treatment was begun were very closely followed.

The rachitic rats all showed a calcium × phosphorus product of 27 or lower. In every case a marked rise in the product preceded the first evidences of new bone formation. Practically no healing took place until the product had reached 40 or above. In most cases the lowest value which accompanied healing lay between 40 and 50.

These results are remarkably paralleled by observations of the calcification of rachitic cartilage when it is immersed in solutions made up of inorganic salts of the kind and concentration that are found in blood serum. When the calcium × phosphorus product of such solutions is 30 or less, calcium is not deposited in the tissue. When the product is 40 or more, calcification is regularly obtained in vitro in about nine hours.

Composition of Bone.—In the absence of vitamin D, bone is abnormal both in chemical composition and in histologic structure. Rachitic bones of children and animals have a total ash content and a calcium and phosphorus content considerably below the nonrachitic. Normal bones, for example, contain from 55 to 60 per cent of ash, but in rickets the ash content sinks to 30 per cent or lower. Singularly enough, the ratio of calcium to phosphorus remains unchanged, showing that if calcium and phosphorus are deposited at all they are deposited together in the usual chemical combination.

The ratio of ash to organic residue in the fat-free bone (A/R ratio) may, however, be considerably altered, the ash being low and the organic residue abnormally high. In a group of animals studied by Chick, Korenchevsky and Roscoe, the A/R ratio in the bones of young rats on a standard rickets-producing diet varied from 0.4 to 0.8, while in the bones of rats receiving the same diet plus cod liver oil the A/R ratio was 1.

Histologic Structure.—Deficient calcification results in abnormal histologic structure and in a characteristic roentgen picture. These must be mentioned here because of their widespread use in studying the effects, the distribution and the quantitative relationships of vitamin D.

Histologically the absence of calcification may be detected in either one of two ways—by means of the now famous line test, first suggested by McCollum and Shipley, or by the microscopic examination of partially decalcified bone, stained with hematoxylin. The theoretical explanation of the latter test is that tissue which has not been calcified will fail to take the stain, but Cameron in a recent study has shown that the method is open to serious criticism and that the results must be used with caution.

The line test is so delicate that very slight degrees of rickets or of healing can be detected by its use. It is therefore much used in quantitative estimations of vitamin D and is, in fact, the test on which the standard method of assay of viosterol (irradiated ergosterol) in the United States is based.

The principle underlying the test is that when bone sections are soaked in dilute solutions of silver nitrate, silver phosphate is formed in the areas where calcification has taken place, and this silver salt, when exposed to intense light, is reduced to black silver. A distinct dark line of calcification appears at the ends of normal bones, no line at all in severe rickets, and a more or less sharp line in cases of healing rickets, according to the degree of recovery. From the width and character of the line formed under standard conditions, the relative quantity of the antirachitic effect is judged.

Roentgenograms.—Evidence of imperfect calcification is also found in roentgenograms of the ends of the long bones. In children the ends of the bones, normally convex in outline, develop a frayed appearance and finally become "cupped" or concave instead of convex. In severe rickets in rats the uncalcified area (metaphysis) between the diaphysis and the epiphysis, normally a thin, sharply defined line, widens into a broad and irregular band.

Although not quite so delicate as the line test, the roentgenogram will nevertheless detect the presence of very early stages of rickets or of slight degrees of healing. It therefore is also much used in quantitative work with vitamin D, the degree of antirachitic effect being judged by the width of the uncalcified metaphyseal band.

The roentgen method has the great advantage of allowing the investigator to follow the progress of healing in one and the same animal during life, which, of course, is impossible with the line test. According to Hess, a further benefit derived from the use of roentgenograms is that "In general, it has tended toward an appreciation of the labile nature of bone tissue, of its quick response to favorable or adverse influences and to overthrow of the time-worn conception of bone as a fixed and inert tissue."

BODILY STORAGE OF VITAMIN D

Individual differences in susceptibility to rickets have been frequently observed in experimental animals as well as in infants. The cause of the differences in experimental animals can usually be traced to the type of diet eaten by the mother during pregnancy and lactation. For example, as early as 1923, Hess and his associates discovered the disconcerting fact that a certain strain of rats, purchased from a dealer, were much more resistant to rickets than the rats that were raised in his own laboratory. Investigation showed that the stock diet on which the purchased animals were bred was rich in minerals and vitamins, considerably richer than that used in Hess's laboratory. When the nursing mothers were transferred to Hess's ration at the beginning of the lactation period, the resistance of the young rats disappeared.

Further striking proof that other young animals may be protected from rickets by the diet of the mother during pregnancy and lactation is furnished by a recent study made by the Toveruds of the University and the Dental School of Norway. As a part of this investigation it was found that if mother dogs were fed a diet lacking in minerals and fat-soluble vitamins during both pregnancy and lactation, their puppies were very susceptible to rickets, which would develop within three weeks after they were placed on the same deficient diet on which their mothers had been fed.

Other puppies, whose mother was fed the deficient diet during lactation only, required six weeks for the development of rickets, while in still others whose mothers were fed a normal diet throughout pregnancy and lactation the disease did not develop until the puppies themselves had been on the deficient diet for thirteen weeks.

Clearly, the more deficient the diet during pregnancy and lactation, the less vitamin D the puppies were able to store and the sooner they succumbed to the influence of the rickets-producing diet.

THE QUANTITATIVE DETERMINATION OF VITAMIN D

As yet, no chemical or physical methods for the quantitative determination of vitamin D have been developed. Neither has any one standard biologic method been agreed on. Points which are still to be decided are, first, whether a rickets-producing diet shall be used or whether a less drastic diet, deficient in vitamin D only, shall be employed. If a rickets-producing diet is used, which one of the standard diets shall be chosen? Shall rickets be prevented or shall it be allowed to develop and then be cured? What shall be the criterion for the judgment of the severity of the rickets, or of the degree of healing? Finally, how shall the unit of measurement be defined?

The various methods for quantitative determination which have been suggested will be discussed in the next section.

Production of Rickets in Rats.—For quantitative work with vitamin D the rat is exclusively used. Among the advantages which this animal offers is, first, the fact that it will readily develop the disease on a properly chosen diet. Two other important advantages are that it is small and therefore comparatively easily and inexpensively cared for in large numbers, and its short span of life makes accurate results possible within a reasonably short time.

In order to produce true rickets, the experimental diet must be abnormal in two respects: It must be deficient in vitamin D, and the relation between calcium and phosphorus must be abnormal, that is, must vary considerably from the ratio of 2 parts of calcium to 1 of phosphorus, which is found in normal bone. Diets in which the ratio of calcium to phosphorus is very high, 4 to 1 or higher, produce a type of rickets very similar to that usually found in babies. Low calcium-high phosphorus diets will also produce rickets, but of a different type, and are therefore much less commonly used.

Table 2.—*Composition of Certain Standard Rickets-Producing Diets*

Sherman and Pappenheimer Diet 84	Per Cent	Steenbock Diet 2965	Per Cent	McCollum Diet 3143	Per Cent
Patent flour.......	95.0	Yellow corn.........	76	Whole wheat.......	33
Calcium lactate...	2.9	Wheat gluten......	20	Whole yellow corn.	33
Sodium chloride...	2.0	Calcium carbonate	3	Wheat gluten......	15
Ferric citrate......	0.1	Sodium chloride...	1	Gelatin powder....	15
				Calcium carbonate	3
Ca:P 6.5-1		Ca:P 4-1		Sodium chloride...	1
				Ca:P 4-1	

In the United States three standard rickets-producing diets have been developed: Sherman and Pappenheimer's diet 84, McCollum's diet 3143 and Steenbock's diet 2965. The composition of these diets is given in table 2. They are all decidedly lacking in vitamin D and have a high calcium to phosphorus ratio. Although by no means ideal in other respects, they are sufficiently adequate to support growth and maintain a satisfactory state of nutrition for the short period of the experiment.

A fourth, more nearly adequate, diet has been suggested by Osborne and Mendel. Unlike the other standard diets, it is made up entirely of purified food substances. It contains a salt mixture which is entirely lacking in calcium and phosphorus, and any desired ratio between the two may be obtained by adding different amounts of their respective salts. This diet, although promising, has not so far gained any wide use.

A further requirement for the production of rickets in experimental animals is that they be kept away from the direct sunlight. They are therefore kept in rooms which either receive no daylight at all or have the only daylight coming through window glass.

Curative vs. Preventive Methods.—Measurements of antirachitic potency may be made either in terms of the minimum quantity of a given substance needed to prevent rickets or in terms of the minimum quantity of the same substance needed to produce a definite degree of healing. Each method has its advocates and each is widely used. Results in the preventive type of experiment seem to be somewhat more clear cut and less of the vitamin appears to be needed for prevention than for cure. Nevertheless, up to the present time, the curative method appears to have been used by the majority of investigators.

Diagnosis of Rickets.—The diagnosis of rickets in rats is dependent on a number of laboratory tests, two or more frequently being made as checks against one another. During the life of the rat the investigator is dependent chiefly on roentgenograms. After death, gross deformities of the skeleton may be observed, the blood or bones may be analyzed for calcium or phosphorus, or the bones may be examined histologically, either by means of the line test or by staining with hematoxylin after partial decalcification with Müller's fluid. For exact quantitative work the line test, roentgenograms and the chemical analysis of the bones appear to be the most suitable.

Quantitative Use of the Line Test.—In the United States the line test has formed the basis of the majority of quantitative determinations of vitamin D. The test has been developed to a very high degree of precision by Bills and his associates in the research laboratories of Mead Johnson & Co.

Because of the differences in the quantity of vitamin D which may be stored by young rats whose mothers have received different amounts of the vitamin during pregnancy and lactation, it is essential that the animals used for quantitative assay be bred on a uniform stock diet, not too high in vitamin D. According to the procedure of Bills, which is curative in nature, the young rats, bred on such a ration, are removed, immediately after weaning, to a room in which all daylight, even that filtered through window glass, is excluded. They are kept there from eighteen to twenty-four days on McCollum's diet 3143. They are judged to be ready for the test when a palpable enlargement of the wrists and a slightly waddling gait has developed.

The material to be tested is incorporated into the rickets-producing diet and administered for exactly five days, an individual daily food consumption record being kept. Each rat must eat a definite amount (from 2 to 4 Gm. daily) and must not lose weight, because a loss of weight, possibly due to the liberation of phosphorus from the tissues, may occasionally of itself cause calcification.

At the end of five days the animal is killed and the line test made. Four degrees of healing are recognized, indicated by from one to four plus signs.

As in all biologic work, the number of rats used in any given assay greatly influences its accuracy. When 100 rats were used, Bills estimated the probable error to be about 4 per cent. With 50 rats it was from 6 to 7 per cent, and with 4 rats, 31 per cent. More than 100 rats do not appear to be needed, even for the most precise determinations, since increasing the number beyond this point did not greatly increase the accuracy of the test.

Quantitative Use of Roentgenograms.—A certain amount of individual variation in susceptibility to rickets occurs even among animals of the same litter, whose ancestors have been bred on the same diet for generations. When the line test is used, it is assumed that in all the animals selected for the test rickets has developed to the same degree. Without individual examination, however, one cannot be absolutely certain that this is the case. For this reason, a large group of investigators prefer the roentgen test, first suggested by Poulsson and Lövenskiold of the Pharmaceutic Institute of the University of Oslo.

The details of the application of this test may vary slightly according to the investigator who uses it. In general, however, young rats are kept on either the McCollum or the Steenbock diet for a period of two or three weeks, until they have developed very severe rickets. At the end of this period, roentgenograms of the knee joints are taken. The substance to be tested is then fed in graded amounts to different groups of animals. At the end of one, two or three weeks the rats are again roentgenographed and the photographs compared.

Comparative Accuracy of the Line Test and Roentgen Methods.—In general, the line test and the roentgen method, when used on the same animal, give results that are identical or very nearly so. However, the line test is considered somewhat more delicate, since it will detect very early stages of healing which are not visible on a roentgenogram. It will also detect the cases of atypical healing that occasionally occur.

Chemical Analysis of the Bones: Measurements Made on Diets Deficient in Vitamin D Only.—On diets deficient in vitamin D but having a normal calcium and phosphorus content, true rickets, as judged by histologic examination of the bones, does not appear. Nevertheless, on such diets the bones are abnormally low in calcium content and will respond to graded allowances of vitamin D by corresponding increases in calcium.

So close is the relationship between the quantity of vitamin D in the diet and the amount of calcium in the bone that Sherman and Stiebeling have suggested the chemical analysis of the bones as a basis for the quantitative determination of vitamin D when it is desired to employ a diet adequate except for the vitamin. The technic which they recommend is the following:

Young rats, from 21 to 28 days old, are placed on a diet comparable to that used in the determination of other vitamins. Sherman and Stiebeling's diet consists of purified casein 18 per cent, cornstarch 66 per cent, Osborne and Mendel salt mixture 4 per cent, dried brewers' yeast 10 per cent, sodium chloride 1 per cent and dried powdered spinach 1 per cent. The spinach is used because it is rich in vitamin A but practically devoid of vitamin D. The animals are kept in semidarkness in rooms lighted through glass.

One or more of each litter of animals used is kept on this basal diet without supplement (negative control); another (positive control) is given an abundance of vitamin D. Still others are fed graded allowances of the food under investigation. Since Sherman and Stiebeling have found that the bones of animals from different litters, even on the same diet, do not have exactly the same calcium content, they state that it is important to have members of the same litter in all groups. They also state that probably animals from at least five or more litters should be used in each group.

After twenty days, the test is terminated, the rats are killed and the femurs are analyzed. Those amounts of the material under investigation which induce a degree of calcification midway between the maximum and the minimum values obtained with the positive and negative controls are considered to have equivalent amounts of vitamin D.

This method is so new that no other reports of its use are available. However, since it furnishes a means of measuring small amounts of vitamin D in foods which have hitherto been considered poor sources of the vitamin, it would appear destined to have a wide use.

STANDARDIZATION OF IRRADIATED ERGOSTEROL AND COD LIVER OIL

The adoption of a unit of measure that will express differences in antirachitic potency in numerical terms if possible is highly important, particularly for the standardization of cod liver oil and irradiated ergosterol which are to be used medicinally. But the definition of such a unit involves a number of variables, and no entirely satisfactory statement has yet been made. In the first place, no agreement has yet been reached as to whether the rat unit should be that amount of an antirachitic substance which when fed to rachitic rats will just suffice to cure them or will just suffice to protect them from rickets. Further points that remain to be agreed on are a single method for quantitative determination, a satisfactory standard to which antirachitic potency may be referred, and whether the unit shall be expressed in terms of the minimum total quantity of antirachitic substance needed to cure rickets, or as the minimum daily dose.

The American Unit.—In the United States the Council on Pharmacy and Chemistry of the American Medical Association has accepted the rat unit proposed by the Wisconsin Alumni Research Foundation (Steenbock) for the standardization of irradiated ergosterol. This unit is defined as "that amount of vitamin D which, when uniformly distributed into the standard vitamin D deficient diet—ration 2965, *J. Biol. Chem.* 64: 263, 1925—will produce a narrow and continuous line of calcium deposits on the metaphysis of the distal end of the radii and ulnae of standard rachitic rats." In this instance the line test and the Steenbock diet are taken as standards.

Viosterol (irradiated ergosterol) is standardized by comparison with a "potent cod liver oil," which is defined as one that contains 13.33 rat units per gram, or one rat unit in every 75 mg. of oil. This 75 mg. of oil, it should be noted, does not constitute the minimum daily dose but is the total quantity of oil to be given during the entire period of the experiment, from six to ten days, the exact length of the period depending on the food consumption of the individual rats.

The British Unit.—The British Medical Research Council objects to the standardization of irradiated ergosterol in terms of cod liver oil because of the variation in potency of different samples of the oil and because of the variation in response to equal doses of any antirachitic material that may be shown by apparently similar animals when tested at different seasons of the year or bred in different laboratories.

They propose to avoid these difficulties by using a standard solution of irradiated ergosterol made under accurately recorded and controlled conditions and adjusted to a known standard concentration. In any individual assay of an unknown material they recommend that the rats be fed in pairs, one member of each pair being given the unknown material and one the standard preparation. The response of any given group of rats to the two preparations is therefore simultaneously observed.

The council further suggests:

> That the unit of vitamin D be defined as the antirachitic potency of a quantity of this preparation corresponding to 0.0001 mg. of the ergosterol used in its preparation.
>
> That either the x-ray method, the "line test" or the chemical analysis of the bones of the experimental animals be recommended for use in the estimation of vitamin D.
>
> That supplies of the standard material be made available for general distribution from the National Institute for Medical Research, Hampstead. As the supply is limited it is hoped that users will themselves prepare standard solutions of irradiated ergosterol for use in individual tests, retaining the National Institute's material for reference. It is important that all such standard materials be kept at temperatures not exceeding 0 C.

Other Units.—In addition to those units which have been recognized by authoritative bodies in this country and in England, a number of others have been suggested and used in various scientific and commercial laboratories.

For example, Poulsson has suggested the use of a unit analogous to that adopted by the American Pharmaceutical Association for the measurement of vitamin A. This unit is defined as the minimum daily dose which, given over a period of six days, will cure a severe rickets.

In Germany the unit used by Windaus and his associates and by the firms dispensing Vigantol, the German equivalent of viosterol, is defined as that amount of active substance which exactly suffices to protect, with certainty, young growing rats from rickets.

Because of this multiplicity of units, Bills prefers to express the potency of vitamin D preparations in terms of their "cod liver oil coefficient," the potency of average cod liver oil being taken as the standard.

Standardization of Viosterol.—In the United States, as already noted, the Steenbock unit has been accepted as the basis for the standardization of viosterol.

Viosterol prepartions as now accepted by the Council on Pharmacy and Chemistry have a potency of 250 D, that is, 250 times the vitamin D potency of the standard cod liver oil defined by Steenbock. Cod liver oil which has viosterol added to it has a potency of 10 D.

In order to insure the manufacture of a uniform product, the Wisconsin Alumni Foundation has supplied each of the manufacturers operating under its licenses with a preparation of viosterol in oil 250 D to be used as a control for their respective products. Firms which are licensed by the Foundation are the Abbot Laboratories, Mead Johnson & Co., Parke, Davis & Co., and E. R. Squibb & Sons.

Standardization of Cod Liver Oil.—As yet, no standard method for the assay of cod liver oil for vitamin D has been adopted. The result is that different methods are used in different laboratories, and widely differing statements of antirachitic potency are to be found on the labels of the commercial products. A few firms merely state that their oil is of tested antirachitic potency. Others state the numbers of units per gram or per ounce, but since they do not define the unit used, their statements do not convey much real information.

It is to be hoped that the next issue of the Pharmacopeia (U. S. P. XI) will contain a method of assay for the antirachitic potency of cod liver oil. It has been suggested that such a method should require a uniform method of labeling, preferably in terms of units per gram of oil, and should not permit statements of numbers of units per ounce or any multiple of 1 Gm. or any fraction thereof, since such statements only add to the confusion in the minds of the public.

FORMATION OF VITAMIN D BY ULTRAVIOLET RADIATION

Ergosterol as the Provitamin.—As has been pointed out, the chief substance which assumes antirachitic potency on irradiation is a formerly little known sterol, ergosterol. Although a number of other similar compounds are known and have been investigated, none, with the possible exception of cholesterol, have ever acquired antirachitic potency. Cholesterol, if it can be activated at all, becomes only weakly antirachitic when compared with ergosterol. The latter may therefore be regarded as certainly the most important, if not the only, provitamin.

Wavelengths of Light: The Spectrum.—As is well known, sunlight passing through a quartz prism is broken up into the familiar color spectrum made up of radiations of different wavelengths. Only part of the spectrum is visible. The visible part, ranging from red to violet, consists of radiations measuring from about 800 millimicrons at the red end to 390 millimicrons at the violet. Longer than 800 millimicrons are the infra-red or heat rays, recognized by their heating effect when a blackened thermometer bulb is placed at their end of the spectrum. At the other end of the spectrum, shorter than 390 millimicrons, are the invisible ultraviolet rays, which are recognized by their chemical action on a photographic plate and are sometimes called the chemical or actinic rays. Very much shorter, but usually thought of as part of the same continuous spectrum, are the powerful x-rays. A number of important figures on the wavelengths of light will be found in table 3.

Table 3.—*Significant Figures of Wavelengths of Light*

	Millimicrons
Visible light	770-390
Ultraviolet	390-185
Wavelengths with greatest antirachitic potency	302-265
Longest wavelength with antirachitic potency	313
Shortest wavelength passing through window glass	320
Shortest wavelength in summer sunshine	290
Shortest wavelength in May sunlight in Chicago	299
Shortest wavelength in December sunlight in Chicago	305
Shortest wavelength from mercury quartz lamp	185

Ultraviolet Rays Responsible for Antirachitic Potency.—Early work by Hess and Weinstock established the fact that ultraviolet rays, to have antirachitic potency "must have a wavelength not longer than 302 or possibly 313 millimicrons." Further work by Hess and Anderson and by Griffith and Spence has shown that light of wavelengths between 302 and 280 was highly potent, but that wavelengths of 265 millimicrons were much less effective.

Recently Marshall and Knudson have shown that ergosterol can be activated by wavelengths shorter than 265 millimicrons but that the potency of the product is, in the beginning at least, directly proportional to the amount of energy absorbed; that is, to the intensity of the light received. When the very short wavelengths, of 230 millimicrons or less, are isolated from the spectrum of a mercury vapor quartz lamp, the intensity is so low that weeks or months of irradiation would be required to prepare a potent product.

Potency of Irradiated Products.—The potency of various preparations of irradiated ergosterol is known to vary enormously, and the maximum limit of activity has perhaps never been reached. The English standard preparation, irradiated in alcohol, is effective in daily doses of 0.0001 mg., but products which show antirachitic potency in doses as small as 0.00002 mg. have been prepared. Compared with cod liver oil, the potency may range from 200,000 or less to 700,000 or more times that of average oil. Commercial preparations of viosterol, with a potency of only 250 times that of a standard cod liver oil, are of course much below the maximum and are much diluted before they are marketed.

Variations in the potency of the irradiated products appear to be caused by the medium in which the ergosterol is irradiated, by the intensity and the wavelength of the light used, and by the duration of the irradiation. It is believed that better results are obtained if all traces of oxygen are removed from the apparatus and from the solution before it is irradiated, but a very active product may still be prepared in the presence of considerable amounts of oxygen.

Influence of Solvent.—Ergosterol may be irradiated dry or dissolved in any one of a number of solvents; for example, alcohol, ether, hexane, benzene and various oils. The same degree of potency, however, is not obtained in the different solvents. The potency of ergosterol irradiated in oil is generally believed to be low, but in a recent article by Bills, Honeywell and Cox the statement is made that ergosterol dissolved in arachis oil can be made to attain a cod liver oil coefficient of about 200,000.

In the same article it is reported that ergosterol irradiated in ether developed nearly three times the potency of that irradiated in alcohol—a cod liver oil coefficient of 710,000 in ether compared with 250,000 in alcohol. The authors have no explanation for this phenomenon, which, for the present, for lack of a better term, they call a specific solvent effect.

Overirradiation.—Experience has shown that vitamin D is itself sensitive to ultraviolet radiation and is finally destroyed by it. The solvent seems to determine the rate of destruction as well as the rate of formation, for when alcohol is used as the solvent the potency entirely disappears after three and one-half hours of irradiation, while when ether is used more than eighteen hours is required for complete destruction.

OTHER METHODS FOR THE FORMATION OF VITAMIN D

It is becoming clear that ergosterol may be activated by other means than by irradiation with ultraviolet rays. Several investigators have reported the preparation of potent products by means of irradiation with x-rays and also with radon. One Japanese report states that an active product has been prepared by treatment with ozone, and Bills, in a recent publication, reports that he is now using a new preparation of vitamin D prepared chemically without the agency of ultraviolet rays. He does not give the details of his method at this time, however.

(To be continued)

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

The Council has authorized publication of the following reports. W. A. Puckner, Secretary.

FISSAN POWDER, FISSAN SWEAT ABSORBING POWDER, FISSAN OINTMENT, FISSAN LOTION, FISSAN OIL, FISSAN SULPHUR POWDER, FISSAN OINTMENT-R, AND FISSAN SOAP NOT ACCEPTABLE FOR N. N. R.

As "Labile Milk Albumin Preparations," Walter Lehn, Clifton, N. J., offers a line of "Fissan" preparations which are put out by the Deutsche Milchwerke A. G., Zwingenberg-Hessen, Germany. All are stated to contain as an important constituent some derivative of casein which is inadequately defined.

Fissan Powder is stated to be composed of "Fissan Hydrogel I" ("Labile milk albumin" 0.8 per cent, "Colloidal silicates" 2.25 per cent, zinc oxide 5.3 per cent, "organic fat emulsion" 0.4 per cent) 8.75 per cent, bismuth subnitrate 0.75 per cent, "white bolus" 4 per cent, boric acid 3 per cent, rice starch 10.13 per cent, talc 73.37 per cent. It is stated that "the basis of Fissan Powder is incinerated diatomeae of enormous absorptive power which receives a very fine coating of the highly voluminous Fissan colloid and is combined with the labile milk albumin at blood temperature under physiological conditions." It is asserted that Fissan Powder brings about "quick absorption of wound secretions, killing of germs and therapeutic effect due to the contents of labile milk albumin."

Fissan Sweat Absorbing Powder is stated to be composed of "Fissan Hydrogel II" ("labile milk albumin" 0.8 per cent, "organic fat emulsion" 0.4 per cent, "colloidal silicates" 26.7 per cent, zinc oxide 5.15 per cent) 33.05 per cent, bismuth subnitrate 0.5 per cent, "white bolus" 2.47 per cent, boric acid 1.98 per cent, rice starch 10 per cent, talc 51 per cent, alum 0.5 per cent, salicylic acid 0.5 per cent. The preparation is recommended by the distributor for "hyperhidrosis of the hands, feet and axillae, dry vaginal treatment in fluor albus (leucorrhea) even in severe chronic cases. Highly efficient in various tropical diseases especially Lichen tropicus, Miliaria."

Fissan Ointment is stated to be composed of "Fissan Hydrosol (bismuth subnitrate 0.5 per cent, "white bolus" 3 per cent, boric acid 3 per cent, "labile milk albumin" 0.8 per cent, "colloidal silicates" 1 per cent, "organic fat emulsion" 16.20 per cent) 24.5 per cent, zinc oxide 12 per cent, "organic fat emulsion" 63.5 per cent. The use of this preparation is proposed in eczema of every degree, "ulcers, especially unclean; hemorrhoids, immediate alleviation of pain" "exudate diathesis."

Fissan Lotion is stated to be composed of "Fissan Hydrogel III" ("white bolus" 3.2 per cent, boric acid 2.45 per cent, "labile milk albumin" 0.8 per cent, bismuth subnitrate 0.4 per cent, "colloidal silicates" 3.2 per cent, rice starch 8.83 per cent) 18.88 per cent, zinc oxide 23 per cent, glycerin 29.55 per cent, aluminum acetate 28.57 per cent. It is claimed that the use of this mixture is indicated in "sunburn, toxic erythemata, exanthemata, hyperhidrosis, miliaria, psoriasis in the intervals of chrysarobin treatment" and that its principal field of usefulness is in acute and subacute eczema of all types except in the hairy scalp. . . ."

Fissan Oil is stated to be composed of "Fissan Hydrogel IV" ("labile milk albumin" 1 per cent, "colloidal silicates" 2.25 per cent, talc 3.5 per cent, zinc oxide 6.45 per cent) 13.2 per cent, bismuth subnitrate 0.5 per cent, "white bolus" 1.8 per cent, boric acid 1.35 per cent, rice starch 33.15 per cent, "vegetable fat" 50 per cent. The use of this mixture is proposed in "subacute eczema, especially seborrhea," in "irritable eczema of adults," "irritable eczema of children," for "bleeding skin after shaving," in arsphenamine exanthema and in severe forms of intertrigo.

Fissan Sulphur Powder is stated to be composed of "Fissan Hydrogel V" ("labile milk albumin" 0.78 per cent, bismuth subnitrate 0.37 per cent, bolus alba 0.2 per cent, boric acid 2.45 per cent, zinc oxide 3.58 per cent, "colloidal silicates" 3.88 per cent, "organic fat emulsion" 0.5 per cent) 14.76 per cent (the total of the ingredients of Fissan Hydrogel V should be 11.76 per cent, instead of 14.76 per cent), "colloidal sulphur" 2.24 per cent, talc 81.4 per cent, rice starch 1.6 per cent. The use of this preparation is proposed by the distributer "as an adjuvant in impetigo contagiosa, acne, furunculosis after the acute stage, parasitic dermatoses, as an after treatment in intertriginous mycotic skin diseases."

Fissan Ointment R is stated to be composed of "labile milk albumin" 0.5 per cent, "colloidal silicates" 0.94 per cent, boric acid 3.01 per cent, bolus alba 3.01 per cent, strontium salicylate 1 per cent, sodium salicylate 15 per cent, salicylic acid 3.01 per cent, zinc oxide 4.01 per cent, "organic fat emulsion" 69.42 per cent, perfume 0.1 per cent. Although the external application of alkali salicylates is considered to be an inefficient method of obtaining salicylate effects, this ointment is claimed to give "excellent results in cases of rheumatic ailments."

Fissan Soap is stated to be composed of soap stock "manufactured from the best raw materials as customary in soap making" 99 per cent, casein 0.24 per cent, boric acid 0.12 per cent, "colloidal silicates" 0.05 per cent, "organic fat emulsion" 0.17 per cent, bolus alba 0.12 per cent, zinc oxide 0.3 per cent. The use of this soap is recommended for "daily washings of sensitive skins, eczema, seborrhea, psoriasis, prurigo, shampoo in cases of seborrhea" and for "damp compresses in ulcus cruris, wounds, hyperkeratosis."

In reply to a request for information in regard to the unofficial constituents stated to be contained in the Fissan preparations, the Council was informed that labile milk albumin is prepared by exposing milk albumin to incubator temperature under physiologic conditions in order to bring it into a condition favorable to catabolism. The "organic fat emulsion" was stated to be "nothing but lanolin with 20 per cent water," while the "vegetable fat" was stated to be "nothing but rapeseed oil." Walter Lehn, the importer, forwarded, along with specimens of these preparations, fourteen German reprints of articles and references to eight other German publications dealing with Fissan. The authors of these articles range from Professor Pinkus of Berlin, Professor Polland of Graz and Professor Reuss of Vienna down to Heinrich Rose, medical student: Comparative Tests with Various Preparations in Sunburn and Glacierburn ("Vergleischsversuche mit verschiedenen Fabrikaten bei Sonnen- und Gletscherbrand"). The gist of most of these articles is that the preparations contain a powder with a great absorbing power, "colloidal silicates," "Fissan Colloid," "fluor-silicic acid colloid," and "colloidal labile milk albumin," which is claimed to be of great therapeutic activity and free from irritation. These are the base of the powders. The claim is made that there are no irritating animal fats used in making up the ointments or lotions. The claim is also made for the soap that because there are no animal fats in it it is absolutely nonirritating. There is still a further exhibit constituting the distributers' advertising, entitled "Fissan," in English, giving a résumé of these different preparations, and on the last page showing how the Fissan ointment and the Fissan lotion may be used for dispensing in connection with other preparations which are classified, many of them not found in New and Nonofficial Remedies; for example, Naftalan, Bromocoll, Tumenol and Ichthyol. Of the German reprints submitted, practically all are of an uncritical type with a tendency to quote the conclusions where these same preparations have been used in other clinics. There is also a tendency throughout the articles for recommendation that the patient first be treated with Fissan ointment and then that the Fissan powder be thereafter employed. One of the authors, Karrenberg, has followed this preparation through two years of observation at the St. George Hospital in Hamburg and seems to be really enthusiastic over the line of medicament.

It is possible that there may be some therapeutic value in this new type of powder because of its absorption value, and in this new type of colloidal milk albumin; but controlled clinical evidence for such value is lacking and the advertising claims are certainly grossly exaggerated.

Without at this time passing on the adequacy of the furnished information in regard to composition and control or considering the rationality of the mixtures, the Council finds

Fissan Powder, Fissan Sweat-Absorbing Powder, Fissan Ointment, Fissan Lotion, Fissan Oil, Fissan Sulphur Powder, Fissan Ointment-R, and Fissan Soap unacceptable for New and Nonofficial Remedies because no adequate statement of composition appears on the labels or in the advertising; because the advertising brochure advertises all Fissan preparations and in some cases the label of one recommends the use of others so that the acceptance of one would constitute an indirect advertisement of all; because the names are unacceptable since they are not descriptive of composition, and because the advertising claims are extravagant and unwarranted.

When the preceding report was submitted to Walter Lehn, Importer, Oct. 24, 1931, a reply was received which indicated a desire on the part of the manufacturer and his agent to make the products acceptable. May 3, 1932, the distributer was requested to supply the Council with copies of the present labels and advertising. In response to this request there were received copies of labels for Fissan Powder, Fissan Lotion, Fissan Oil, and Fissan Sulphur Powder, which contain no declaration of composition; a pamphlet "Fissan" in which the individual Fissan preparations are not mentioned; and advertising cards for each Fissan preparation, containing a statement of composition and claims essentially similar to those given in the Council's report. The Council declared Fissan Powder, Fissan Sweat Absorbing Powder, Fissan Ointment, Fissan Lotion, Fissan Oil, Fissan Sulphur Powder, Fissan Ointment-R, and Fissan Soap unacceptable for New and Nonofficial Remedies because no adequate statement of composition has been supplied; because the names are unacceptable since they are not descriptive of composition, and because the advertising claims are extravagant and unwarranted.

EXICOL NOT ACCEPTABLE FOR N. N. R.

In 1930, Exicol (Brooklyn Scientific Products Co., Inc.) was declared unacceptable for New and Nonofficial Remedies because it was found to be a needlessly complex and therefore unscientific mixture marketed with unwarranted therapeutic claims under a nondescriptive but therapeutically suggestive name. The product was then stated to contain in each capsule "Oleic Acid 15 min., Sodium Taurocholate ¼ gr., Sodium Glycocholate ¼ gr., Desiccated Pig's Bile 1 gr., Oil Cinnamon U. S. P. ¼ min." The dosage recommended was two capsules two or three times a day. Objection was made to a number of claims in the advertising and particularly to the name of the product.

The manufacturers have modified the advertising to meet a good many of the more important criticisms. They have eliminated pig's bile from the preparation and substituted larger amounts of sodium glycocholate and sodium taurocholate. To meet the objection to the name, the manufacturers propose renaming the product "Choleol" or "Olechol," but these names are equally unacceptable with "Exicol." The present advertising is an improvement over that formerly issued, though it constitutes an indirect advertisement of the unaccepted product, "Novatone" and still makes extravagant and unwarranted claims. Most of these claims seem to be taken from an article by Levinson, which is enclosed with the other advertising. Levinson treated seventy-eight patients with various diseases of the gallbladder with Exicol and found that 59 per cent showed marked improvement, 15 per cent moderate improvement, and 26 per cent no improvement. Levinson quotes an article by McDonald, who surveyed 511 gallbladder cases. Of these, 276 were treated medically and 67.8 per cent improved. A slightly greater proportion, 73.6 per cent, showed improvement following surgery. These figures do not indicate that Exicol had any great effect on the percentage of recoveries.

The Council declared Exicol unacceptable (*a*) because it is an unoriginal combination of substances which have been in use for many years, bearing a trade name that is not descriptive of the composition; (*b*) because the advertising advances unwarranted claims; (*c*) because it is used to advertise an unaccepted preparation, and (*d*) because the statement of composition does not appear on the label or in the submitted advertising, though it is included in the trade package in the form of a slip.

This second report of the Council on Exicol was sent to the manufacturer (Sept. 24, 1931), and the firm wrote (Oct. 21, 1931) asking for an extension of time in which to meet the Council's objections to the product. Although six months has elapsed, the firm is making claims essentially similar to those to which objection was made previously and is marketing the product under the nondescriptive and unacceptable name "Exicol." This is shown by the advertising received by the Council from physicians since the date of the last report. The Council therefore confirmed its decision that Exicol is not acceptable for New and Nonofficial Remedies.

Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

SAVITA

A Yeast and Vegetable Extract Seasoned with Salt; Rich in Vitamin B Complex and Added Available Iron

Manufacturer.—Battle Creek Food Company, Battle Creek, Mich.

Description.—A viscous mixture of extracts of brewers' yeast and vegetables (parsley, leek, celery, onions and carrots), salt and saccharated iron oxide.

Manufacture.—The product is a mixture of the ingredients mentioned.

The yeast extract is prepared from brewers' yeast (Saccharomyces cerevisiae) obtained from the manufacture of beer. The yeast is washed in clear water, to remove bitter adhering material from hops, and extracted with hot salt brine. The extract contains the cell fluids and soluble ingredients of the yeast cells. The coagulable albumin is removed.

The vegetable extract is prepared from thoroughly washed fresh parsley, leek, celery, onions and carrots. The juice is expressed and condensed in a "vacuum" evaporator. Salt is added to the extract as a preservative.

The yeast and vegetable extracts are combined and concentrated in "vacuum" at a temperature of from 50 to 55 C. to the desired consistency of the product. The yeast extract is combined with the vegetable extract within twenty-four hours after separation of the yeast from the beer. Saccharated ferric oxide is admixed with the combined extracts to increase the iron content. The paste is heated sufficiently to flow readily through the filling machines into screw top lacquered cans or glass jars.

Savita contains no ingredient of animal origin, collagen material nor the nitrogenous compounds creatine and creatinine found in meat extract.

Analysis (submitted by manufacturer).—

	per cent
Moisture	26.0
Ash	27.8
Sodium chloride in ash	15.2
Fat (ether extract)	trace
Nitrogenous substances estimated as protein (N × 6.25)*	31.9
Crude fiber	none
Copper reducing substances as dextrose	5.6
Carbohydrates (by difference)	14.3
Iron (Fe)	0.03
Copper (Cu)	0.0028
Phosphoric acid as P_2O_5	5.1

* The nitrogen determined includes that of ammonium salts, purine and pyrimidine bases, mono and diamino acids and proteins.

Calorics.—1.8 per gram; 51 per ounce.

Vitamins.—Contains from 15 to 20 units of vitamin B complex (Sherman) per gram; has from ten to fifteen times the potency of fresh moist bakers' yeast (the latter shows considerable variation) and two thirds the potency of the highest grade of dry brewers' yeast.

The B and G fractions are respectively fifteen and ten times those of fresh moist yeast.

Claims of Manufacturer.—Savita has a meatlike flavor; it is specially intended for the preparation of broths, bouillons or gravy and to add flavor to many dishes. It is a rich source of vitamins B and G and of dietary iron.

P. P. P. FLOUR (PURE PARAMOUNT PATENT) (BLEACHED)

Manufacturer.—The Concordia Milling Company, Concordia, Kan.

Description.—A patent hard wheat flour for bread baking; bleached or unbleached.

Manufacture.—Selected hard Turkey wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL (June 18, 1932, p. 2210). Chosen flour streams are blended, bleached with nitrogen oxides and a mixture of calcium phosphate and benzoyl peroxide (1 pound of the latter mixture to each seventy barrels of flour) and automatically packed in bags.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.4
Ash	0.4
Fat (ether extraction method)	1.0
Protein (N × 5.7)	9.9
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	74.7

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—A patent hard wheat flour designed for bread baking.

SMACO (207) POWDERED HALF-SKIMMED MILK

Manufacturer.—S. M. A. Corporation, Cleveland.

Description.—A powdered spray-dried half-skimmed milk hermetically sealed in tins in an atmosphere of nitrogen.

Manufacture.—See this section for SMACO (206) Powdered Whole Milk (THE JOURNAL, June 6, 1931, p. 1953); the milk fat content of the milk used is adjusted to half that normal to whole milk.

Analysis (submitted by manufacturer).—

	per cent
Moisture	2.0
Ash	6.5
Fat (ether extract)	13.5
Protein (N × 6.38)	31.0
Lactose (by difference)	45.0
(analysis of normal dilution, 5 level tablespoonfuls of powder diluted to 8 fluidounces.)	
Specific gravity 20/20 C.	1.03
Total solids	10.6
Ash	0.7
Fat (ether extract)	1.5
Protein (N × 6.38)	3.3
Lactose (by difference)	4.9
pH	6.4

Calories.—4.3 per gram; 122 per ounce.

Micro-Organisms.—See this section for SMACO (206) Powdered Whole Milk.

Claims of Manufacturer.—This product is intended especially for infant feeding for use wherever a partially skimmed milk is indicated.

PORTOLA GARNISHED SARDINES

(In Olive Oil)

Manufacturer.—K. Hovden Company, Monterey, Calif.

Description.—Cooked immature sardines (Clupea caeruleus, blue sardines) packed in olive oil with slices of pickle, carrot and pimiento; in tins.

Manufacture.—The harvesting and preparation are the same as described for French Style Portola Sardines (THE JOURNAL, July 9, 1932, p. 135) excepting that slices of pickle, carrot and pimiento are placed on the fish in the tins. The tins are placed in baskets, steam heated for eight minutes and drained for two minutes. Olive oil is added and the tins are sealed and processed under the control of the California State Board of Health as to temperature and time.

Analysis, Calories and Claims of Manufacturer.—See these sections for Portola Sardines (Pilchards) (THE JOURNAL, June 4, 1932, p. 1991).

PLAYTIME BREAD

(Sliced and Unsliced)

Manufacturer.—Port Huron Bread Company, Port Huron, Mich.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, salt, sucrose, vegetable shortening, powdered skim milk and a partially hydrolyzed starch.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.0
Ash	0.8
Fat	1.0
Protein (N × 6.25)	8.7
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	55.2

Calories.—2 6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

AMAIZO CRYSTAL WHITE SYRUP

Corn Syrup, Granulated Sugar and Vanilla

Manufacturer.—The American Maize-Products Company, New York.

Description.—A table syrup; a corn syrup base with sucrose; flavored with vanilla; packed in tins.

Manufacture.—The corn syrup is prepared as described for Amaizo Golden Syrup (THE JOURNAL, May 16, 1931). A relatively small quantity of sucrose is admixed with the corn syrup; the mixture is brought to a temperature of 82 C. and packed hot in friction top cans.

Analysis (submitted by manufacturer).—

	per cent
Moisture	23.6
Ash	0.3
Fat (ether extract)	0.0
Protein (N × 6.25)	0.1
Reducing sugars before inversion as dextrose (maltose and dextrose)	30.0
Sucrose	10.0
Dextrins (by difference)	36.0
Sulphurous acid as SO_2	0.002
Titratable acidity as HCl	0.005
pH	5.0-5.5

No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.

Calories.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—A syrup for cooking, baking and table use and as a carbohydrate supplement in infant feeding. A wholesome energy food for children and adults.

BONWHEAT (WHEAT EMBRYO)

A Vitamin B Food

Manufacturer.—Vitamin Products Company, Tucson, Ariz.

Description.—Moderately dried wheat embryo practically free from bran or other parts of the wheat berry; packed in paper bags in tins.

Manufacture.—Wheat germ from selected flour mills is sieved, cleaned of foreign material, spread out in the sun for drying, and then oven dried on trays at from 70 to 80 C. The final product is packed in bags in tins.

Analysis (submitted by manufacturer).—

	per cent
Moisture	6.
Ash	4.
Fat (ether extract)	9.
Protein (N × 6.25)	37.
Crude fiber	2.
Carbohydrates other than crude fiber (by difference)	42.

Calories.—4.0 per gram; 114 per ounce.

Vitamins.—The natural vitamin content of the wheat germ is retained in large measure; vitamin A is present; a good source of vitamin G and an excellent source of vitamins B and E.

Claims of Manufacturer.—The product is recommended as a food rich in vitamin B for raising the level of that vitamin in the diet.

THE JOURNAL OF THE
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SATURDAY, JULY 16, 1932

THE BLOOD OF NATIVES AT HIGH ALTITUDES

It is a familiar observation that high altitudes, with their lowered barometric pressures, may interfere with the physiologic functions of perfectly healthy persons who encounter such environmental conditions for the first time. The untoward effects are ascribed primarily to the lack of oxygen resulting from the lowered partial pressure of the indispensable respiratory gas. Other factors, such as fatigue, may add to the discomforts that are familiar as mountain sickness and aviators' disease; but the foremost symptoms are clearly referable to some degree of oxygen want. To some persons the characteristic malaise comes at heights of only a few thousand feet above sea level; others are not affected until the barometer becomes notably low. In any event physiologic adjustments seem to occur within a short period, whereupon the affected persons are said to be acclimatized.

In 1878, Paul Bert[1] predicted that the blood of man and animals living at high altitudes would be found to have a greater oxygen capacity than that of corresponding individuals living at lower levels. He surmised that the cause of this increase in the oxygen carrying power of the blood would be found to be the decrease in the partial pressure of the oxygen in the atmosphere respired. In 1882 he gave an account of some experiments in which the blood obtained from animals living at a high altitude in Bolivia was found to contain a larger percentage of oxygen than did blood taken from animals at sea level. A little later, in 1890, Viault observed the increase in the number of red corpuscles per cubic millimeter of blood in himself and his companions during a three weeks' visit in Peru at an altitude of 14,400 feet. Numerous subsequent observations which have dealt with these phenomena have confirmed beyond question the earlier data. As an illustration of the changes in the blood in mankind living at different altitudes, the following figures may be cited: The red corpuscles vary at sea level between 4.5 and 5.4 millions per cubic millimeter; at Colorado Springs, altitude 6,000 feet, between 5.5 and 6.3 millions; and on Pike's Peak, altitude 14,100 feet, between 6 and 8.2 millions.

According to various studies on Pike's Peak, the increase in hemoglobin and red corpuscles for an individual is not the same during several trips and sojourns at that altitude. The increase occurs most rapidly when the subject is in excellent physical condition. If prior to the ascent his life has been sedentary and he is known to be physically unfit, the changes will be slow in beginning and the increase when followed day by day will be moderate or slight. If, on the other hand, the subject has taken regular physical exercise and is in excellent condition or physically fit there will be a decided rise in both hemoglobin and red corpuscles in the first twenty-four hours spent at the high altitude. It has also been shown that fatigue, induced by walking up a mountain, delays the increase in hemoglobin and red corpuscles. A recent writer[2] has asserted that it is logical to assume that the optimal physiologic processes, which make it possible for the organism to thrive favorably under a low oxygen tension, will be found in the study of the man whose adaptation represents a process of centuries. Then, he adds, perhaps we shall interpret, as it must be logically so, the failure of adaptation from the point of view of deviation from the physiology of the native of the altitude, and not from the physiology of sea level, as we do it today.

In harmony with this suggestion, observations on certain of the blood characteristics of the Indian natives of the Peruvian Andes have been presented by Hurtado.[2] His investigation was conducted in the town of Morococha, Peru, at an altitude of 14,890 feet, and with an average barometric pressure of 410 mm. of mercury. Observations on the erythrocyte count gave an average increase of about a million red cells per cubic millimeter over the sea level normal value, but a considerable percentage of these natives live with a red cell count that would be considered normal at sea level. This result indicates that an increase in erythrocytes of the circulating blood, although the common observation, is not an essential adaptation process for normal life at high altitudes. There is no relationship between the red cell count and age or body measurements. According to Hurtado, each red cell at high altitude contains less hemoglobin, as compared with the normal erythrocyte at sea level, but the corpuscular hemoglobin is not a fixed characteristic: it varies inversely with the level of the red cell count; that is, the higher the count the less hemoglobin in each cell and vice versa. Oxygen determinations in arterial and venous blood verify these observations and indicate that the red cell comes to the tissues with a lower oxygen content as compared with the erythrocyte at sea level.

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[1] The statements following are taken from the Manual of Medical Research Laboratory, War Department, Air Service, Division of Military Aeronautics, Washington, 1918.

[2] Hurtado, A.: Studies at High Altitude, Am. J. Physiol. **100:** 487 (May) 1932.

If these studies are substantiated by further studies in natives long adjusted to successful life more than two miles above sea level, new implications will present themselves. Hurtado suggests that the processes of adaptation to the high altitude, from the point of view of blood morphology, are to be found not primarily in red cell count and hemoglobin increases, as it has often been remarked, but rather in a fine and close correlation between cell number, volume and hemoglobin; and in the existence of a larger surface area in a given volume of blood and in the individual erythrocyte for the hemoglobin and oxygen content, factors which would favor the proper supply of this gas to the tissues. This last process, Hurtado believes, is perhaps the fundamental problem of life at high altitudes.

DIPHTHERIA GRAVIS

For a quarter of a century, investigators of infectious disease have pointed with pride to the therapeutic miracle of antitoxin for diphtheria, this major pestilence of the nineteenth century having apparently been conquered for all races and for all time. Nevertheless, diphtheria has reasserted its ancient mortality rate in parts of Europe, within the last three years. Some pessimism and theoretical perplexity followed this suddenly acquired clinical intractability. Renewed optimism, however, is inspired by the recent discovery by Anderson and his co-workers[1] of Leeds, England, that the apparent intractability may be due to the introduction or local evolution of a hitherto unknown bacterial form, for which they propose the name B. diphtheriae gravis.

The first indication that the usual serum therapy was not successful in modern diphtheria was the steady rise in case mortality in the Virchow Krankenhaus, Berlin. From a 5 per cent case mortality in 1924, the mortality rose to an average of 26.7 per cent by June, 1927. It was also noted that the refractory cases tended to be pharyngeal or nasal in character, croupous or laryngeal symptoms being rare. Deaths also were equally frequent in infants and in children over 5 years of age. Two years later, the newly refractory diphtheria was reported from France and Czechoslovakia, and a year later from Italy. Last year it appeared in Rumania and certain parts of England. The death rate in Leeds, for example, rose from about 5 per hundred thousand to an average of more than 18 by June, 1931.

In 104 consecutive cases in Leeds, Anderson and his co-workers found 63 severe cases in which pharyngeal cultures showed diphtheria bacilli of atypical morphology, atypical cultural characteristics and atypical physiologic and biochemical properties. In 35 milder cases the historic B. diphtheriae was found, for which they now propose the name B. diphtheriae mitis. In the remaining 6 cases, micro-organisms apparently intermediary between gravis and mitis were found. It is suggestive that the organism known as American Park-Williams 8 falls in this intermediary group.

The suggestion that there are at least two different types of B. diphtheriae is, of course, not new. Twelve years ago, Havens,[2] for example, reported two antigenic groups, or variants, as determined by specific agglutination tests. There was no evidence of cross-agglutination between his groups. Havens' two groups, however, showed little or no differences in morphology, in virulence or in response to commercial diphtheria antitoxin. Hence, he assumed that they were of slight epidemiologic interest. Havens, however, did suggest that the effectiveness of the therapeutic diphtheria antitoxin could probably be enhanced by including both groups in its production. The complete intractability of Anderson's diphtheria gravis to the usual diphtheria antitoxin, therefore, is the essentially new fact brought out by recent investigators. The polyvalent diphtheria antitoxin suggested by Havens therefore becomes an imperative necessity in European clinics and a suggested means of preparedness in American medicine. Of course, it is conceivable that factors other than toxin mutation are the cause of the present clinical intractability.

THE ZIFFERBLATT HAY FEVER TREATMENT

In May, a Philadelphia newspaper published a column-length article with the headlines: "Hay Fever Stayed by Discovery Here. New Inhalant Immunizing Patient to Ravages of Disease Announced." The article opened with the statement that Philadelphia, long noted as a center of medical science, had added another triumph to her achievements by "the discovery by one of her research workers of a 100 per cent successful treatment for hay and grass fever." It continued:

> "Publication of results which disclosed the complete relief of hay and grass fever sufferers in a large number of cases during the summer and early fall of 1931 were announced yesterday by Dr. Arnold H. Zifferblatt, director of the Wynne A. and Robert W. Murphy Memorial Laboratory for Hay Fever Research."

As to the details of the treatment itself, no information was given that had any scientific meaning, although the article described it as "almost ridiculously simple" and consisting essentially in the inhaling of a vapor for from six to fifteen days, which would render "complete immunity for the remainder of the hay fever season." While the article stated that "Dr. Zifferblatt is emphatic in his declaration that the vapor inhalant perfected in the laboratory is not a permanent cure for hay fever," nevertheless, in another part of the same article, they quoted Dr. Zifferblatt as stating:

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[1] Anderson, J. S.; Happold, F. C.; McLeod, J. W., and Thomson, J. G.: J. Path. & Bact. **34**: 667 (Sept.) 1931.

[2] Havens, L. C.: J. Infect. Dis. **26**: 388 (May) 1920.

> "As a result of the work which has been done thus far the *only positive statement we can make is that* patients are definitely relieved of their symptoms for the duration of the season."

Following the publicity given in Philadelphia, a special article on the subject appeared in the Sunday New York *Times* of May 29. These have been followed by reports in papers in various parts of the United States and even as far away as the London *Times*. Naturally, the interest aroused has been great. The Journal has been flooded with requests for information, and it may reasonably be believed that Dr. Zifferblatt and those associated with him in the Murphy Memorial Laboratory for Hay Fever Research have been kept busy. Dr. Arnold H. Zifferblatt, it may be interpolated, is not a physician but a dentist. Reference to the *Quarterly Cumulative Index Medicus* indicates that his total contributions to medical literature during the past ten years are as a co-author of two articles—one in 1927 in a dental journal and another in 1930 on a method of refrigerating blood for centrifugation. Dr. Zifferblatt's legal status in the matter of treating patients with hay fever is maintained by working with and presumably under registered physicians.

From letters that have been sent to The Journal, it appears that laymen who write to Dr. Zifferblatt, asking where the vapor inhalant treatment can be obtained, are told that the product has been "perfected after a long period of experimentation and is found to be extremely efficacious," but that, at the present time, the remedy is applied only at the laboratory. Dr. Zifferblatt's letter closes with the statement that he trusts they might "have the pleasure of serving" the prospective patient. It appears, too, from letters that have come in from laymen and others that the fifteen inhalations constituting the treatment cost $60.

Quite naturally, the medical profession has been as interested in the report of this proposed treatment as have laymen. Some physicians have written to Dr. Zifferblatt, asking what the vapor consists of, how it is administered, where it may be procured, and what chemical agent the treatment supplies that, according to the Zifferblatt report, digests the pollen protein. Dr. Zifferblatt's answer to all such letters as we have seen is to the effect that he and his associates are "not prepared at the present time to issue any information of a definite character until such time as the series of treatments we are now conducting will have been completed."

Summed up, then, the situation seems to be: (1) that Dr. Zifferblatt and his associates claim to have developed a treatment for hay fever that will give permanent relief for the season; (2) that no information regarding this treatment has been published in medical literature, but the widest publicity has been given it through the daily press; (3) that the composition of the drugs used and the methods of administering them are admittedly secret; (4) that at least a proportion of the public is being charged for this secret treatment, which is admittedly in the experimental stage.

Current Comment

THE FINGER NAILS IN TUBERCULOSIS

The Journal recently commented on the observations of Hahn, who found pitting of the finger nails in each of fifty patients with active tuberculosis and in only three in a group with inactive tuberculosis and in none of similar groups of ex-patients and normal controls. More recently, Whitmire of the United States Veterans' Administration Hospital at Knoxville, Iowa, reported his observations on a group of thirty-three patients with active tuberculosis and on similar groups of patients having inactive tuberculosis and on normal controls. Whitmire's patients were also mentally ill, and his results differ from those of Hahn with regard to pitting of the nails. He found pitting in only 66⅔ per cent of the active tuberculous patients, whereas Hahn found it in 100 per cent. In the group of inactive tuberculous cases, Whitmire found pitting in 30.3 per cent and Hahn in only 6 per cent. Whitmire found pitting in his nontuberculous controls in 12.1 per cent, whereas Hahn observed no pitting in his nontuberculous controls. As for longitudinal ridging of the nails, the observations of the two investigators practically agree. Transverse ridging Whitmire found in only 12.1 per cent of the nontuberculous controls as against Hahn's 26 per cent for that group. Neither observer found any cases of hippocratic curving in their nontuberculous groups. With regard to cyanosis of the nails, Whitmire's results in the active tuberculous were somewhat lower than those of Hahn but were much higher in the inactive tuberculosis group and in the nontuberculous controls. There was therefore a considerable difference in the two sets of observations. This may have been due to the fact that neither series included a sufficient number of cases from which to draw definite conclusions.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

July 18. Granny Magic.
July 20. A Woman and a Hobby.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

July 23. "That Tired Feeling."

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—Clinics formed a large part of the fifth meeting of the Fort Smith Clinical Society, June 28, in Fort Smith. Papers were presented by Drs. William T. Pride, Memphis, Tenn., among others, on "Repair of Old Lacerations at Time of Delivery"; Davis W. Goldstein, "Treatment and Control of Ringworm Infection," and Jess E. Little, "Public Health Aspects of Syphilis."——The Ninth Councilor District Medical Society was addressed in Eureka Springs, June 6, by Drs. Frederick H. Krock and William R. Brooksher, Jr., Fort Smith, on "Treatment in Intracranial Injury" and "Carcinoma of the Cervix Uteri," respectively.

CALIFORNIA

State Society Awards Prizes.—At the recent annual meeting of the California Medical Association in Pasadena, it was announced that the annual prize for experimental work would be given to Dr. Harold L. Thompson, Los Angeles, for his paper on "Pyloric Resection." The clinical prize of the association will be awarded to Drs. Norman J. Kilbourne and Charles J. Murray, both of Los Angeles, for their paper entitled "Researches in New Solutions—Injection Treatment of Hydrocele."

CONNECTICUT

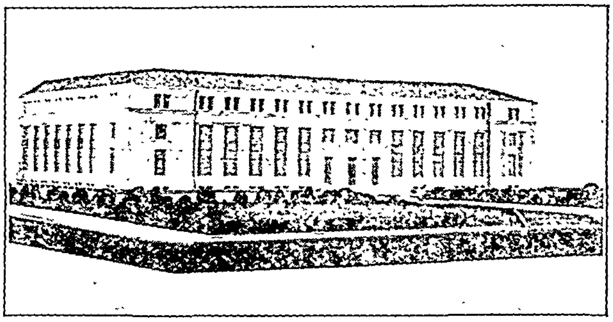
Examination of Food Handlers.—Since January 1, when the New Haven health department began a system of voluntary periodic health examinations of food handlers, and up to June 1, 221 men and women have had their examinations completed and received cards; 168 have had partial examinations. Thirty different concerns are having their employees examined. It is said that there are in New Haven 374 restaurants with 1,504 employees; 120 bakeries with 760 employees; 3 macaroni factories with 31 employees; 34 out-of-town bakery concerns operating in New Haven with 51 employees; 16 commission bakers with 16 employees; 257 soda fountains with 306 employees; 11 candy manufacturers with 90 employees; 58 delicatessen stores with 123 employees; 21 carbonated beverage and distilled water plants with 69 employees; 30 push cart venders, and 21 manufacturers of frozen ices with 60 employees.

Dr. Underhill Is Dead.—Frank Pell Underhill, Ph.D., professor of pharmacology and toxicology, Yale University School of Medicine, died, June 28, at his home in New Haven, after an illness of two months, of nephritis. Dr. Underhill, who was 55 years old, was graduated from Yale in 1900 and took his doctorate there in 1903. He served continuously on the university staff from his graduation. He was professor of pathological chemistry from 1913 to 1918 and professor of experimental medicine from 1918 to 1921, when he became head of the department of pharmacology and toxicology. During the World War Dr. Underhill served in the chemical warfare service with the rank of lieutenant-colonel as commanding officer of the New Haven Station and also in France. He represented the United States at the Inter-Allied Gas Warfare Conference in Paris in October, 1918. Dr. Underhill was an Associate Fellow of the American Medical Association and a member of many other scientific bodies. In 1930 he was selected as a member of the general committee on revision of the United States Pharmacopeial Convention. In addition to frequent contributions to technical journals, Dr. Underhill was the author of "The Physiology of Amino Acids," "The Lethal War Gases," "Toxicology or the Effects of Poison" and a manual of biochemical methods. In THE JOURNAL, July [illegible], page 120, appeared an article by Dr. Underhill on "Clinical Aspects of Vitamin G Deficiency," published under the auspices of the Council on Pharmacy and Chemistry and the Committee on Foods of the American Medical Association.

DISTRICT OF COLUMBIA

Dysentery Suspected in Bonus Army.—A case of epidemic dysentery was under treatment at Walter Reed General Hospital, the Chicago *Tribune* reported, July 1. As a result, Washington health officials began an investigation of the "bonus expeditionary forces," June 30, to determine whether twenty other cases reported among the veterans are of the same type.

New Building for Public Health Service.—The cornerstone of the new Public Health Service Building, now under construction in Washington, D. C., was laid, May 7, by Secretary of Treasury Ogden Mills. It is expected that the building, which will house all the administrative activities of the public health service, will be completed early in 1933. The structure will occupy an entire square on Constitution Avenue between Nineteenth and Twentieth streets, N. W., facing the grounds of the Lincoln Memorial. It will be four stories high and will have cost, when completed, $900,000, exclusive of the cost of the site. The exterior of the building is to be of white Georgia marble with limestone facing in the courts; the architecture is of a modified classical type, with window frames, spandrels and other exposed metal work of satin finish aluminum and the roof of slate colored tile, with slight variation of shade. A small auditorium will be available on the first floor for conferences, lectures and display of health exhibits, and a comprehensive public health library will be installed in modern quarters in the center wing on the second floor. The site is of sufficient size to permit a considerable extension of the building to the north, should such an enlargement become necessary.



GEORGIA

New Health Unit.—Announcement has been made of the formation of a new health unit, consisting of the counties of Walker, Dade and Catoosa, with headquarters in La Fayette. Dr. Fred H. Simonton, who has been in charge of federal health work in the section for the past year, will be the health commissioner for the new unit, the report says. The department will include, in addition to the health commissioner, two nurses, a sanitary engineer and an office secretary, the expenses to be divided proportionately among the three counties. Dr. John H. Hammond, La Fayette, who has been in charge of health work in Walker County for several years, has resigned.

Society News.—Dr. Isham W. Irvin, Albany, among others, read a paper before the Randolph County Medical Society at Cuthbert, June 2, on "Disease of the Optic Nerve Due to Infection of Accessory Sinuses."——Dr. James S. Alsobrook, Rossville, recently discussed medical ethics before the Walker County Medical Society in La Fayette.——Dr. John Calvin Weaver, Atlanta, read a paper on "Diseases and Accidents of the Blood Vessels of the Brain" before the Fulton County Medical Society, Atlanta, June 2. Drs. Edgar G. Ballenger, Omar F. Elder and Harold P. McDonald addressed the society, June 16, on "Symptoms and Diagnosis of Affections of the Deep Urethra and Neck of the Bladder."

ILLINOIS

Appointment of Dr. Koehler.—Dr. Gottfried Koehler, for twenty years assistant commissioner of health of Chicago, has been appointed director of health and hygiene of Springfield schools. The appointment was made on the recommendation of Dr. Clarence W. Milligan, health officer of Springfield, and the Sangamon County Medical Society. The position was recently created with a view to instituting better health supervision in the schools. Dr. Koehler has been medical adviser to the registrar of the Illinois State Department of Health at Springfield.

Chicago

Dr. Harger Honored.—Dr. John R. Harger was presented with a gift recently by fifty members of the staff of the Garfield Park Community Hospital. The presentation was part of a celebration in honor of Dr. Harger on his retirement as president of the Chicago Medical Society. Dr. Harger was one of the founders of the hospital.

Society News.—At the recent meeting of the Chicago Laryngological and Otological Society, the following officers were elected: president, Dr. Charles B. Younger; vice president, Dr. Thomas W. Lewis, and secretary, Dr. Austin A. Hayden.——Dr. Raymond W. McNealy was elected president of the Chicago Surgical Society, June 3.

KANSAS

Society News.—Dr. Minford A. Hanna, Kansas City, Mo., was the guest speaker before a recent meeting of the Clay County Medical Society in Green; he discussed anatomy of the female pelvis.——The Rush-Ness Counties Medical Society was addressed, May 25, by Dr. Horace C. Embry, Great Bend, on osteomyelitis.——A joint meeting of the Wilson County Medical Society and the Southeast Kansas Medical Society, in Fredonia, was recently addressed by Drs. Clarence B. Francisco and Peter T. Bohan, Kansas City, Mo., on back troubles and abdominal pains, respectively. A clinic for crippled children was conducted by the county medical society in the afternoon of this meeting.——At a recent meeting of the Shawnee County Medical Society, Dr. Carl F. Nelson, Lawrence, spoke on "Anoxemia with Its Clinical Manifestations."

KENTUCKY

Appointments at State Hospitals.—Dr. William A. Quinn, Henderson, has been appointed superintendent of the Central State Hospital for the Insane, Lakeland, succeeding Dr. James E. Fox. At the Eastern State Hospital, Lexington, Dr. Elijah H. Maggard, Owingsville, who has been health officer of Bath County since July, 1931, has been appointed to succeed Dr. Fred G. Larue, who is in ill health.

Dr. Dabney Honored.—At a dinner given by the Louisville Medico-Chirurgical Society, June 17, Dr. Samuel G. Dabney received the felicitations of his colleagues on the completion of fifty years in the practice of medicine. Dr. Dabney has recently resigned as clinical professor of otology, rhinology and laryngology at the University of Louisville School of Medicine after forty-seven years of service at the school. He was made professor emeritus. Dr. Louis Frank, a former student under Dr. Dabney, was toastmaster at the dinner.

Society News.—Drs. Philip F. Barbour and Morris Flexner, Louisville, addressed the Christian County Medical Society, Hopkinsville, June 21, on ileocolitis and granulocytopenia, respectively.——Dr. Oscar O. Miller, Louisville, addressed the medical society of Adair, Green, Taylor and Marion counties at Columbia, June 24, on diagnosis of tuberculosis.——Dr. Carl A. Wilzback, Cincinnati, discussed the prevention of cancer before the Kenton-Campbell County Medical Society in Newport, June 17.——Drs. Irvin Abell, Louisville, and Charles F. Anderson, Nashville, among others, addressed the Warren County Medical Society, Bowling Green, June 15, on "Surgical Treatment of Retrodisplacements and Prolapse of Uterus" and "Transurethral Correction of Prostatic Obstruction," respectively.——At a meeting of the Four-County Medical Society (Hickman, Fulton, Graves and Calloway counties) in Clinton, June 30, Dr. Paul A. Turner, Louisville, among others, spoke on treatment of tuberculosis.——Dr. William Marmaduke Brown, Lexington, among others, discussed fractures at the quarterly meeting of the Licking Valley Medical Society at Cynthiana, June 16.——At a meeting of the Cumberland Valley Medical Society, Pineville, July 2, speakers included Drs. Carlisle R. Petty, Lynch, who demonstrated the use of the Delbet splint in fractures of the lower third of the leg, and Louis Frank, Louisville, who showed a motion picture on cancer.

LOUISIANA

Bills Enacted.—The following bills have become laws: H. 390, amending the osteopathic practice act by defining osteopathy as "the treatment of disease, infirmity, deformity, defect, ailment or injury of a human being, without the use of drugs or medicine except antiseptics and anodynes locally applied, by manipulations applied to the nerve centers, bones, muscles or ligament"; H. 697, prohibiting the possession, sale, disposal of, transportation or delivery in any form whatsoever of marajuana, or any of its derivatives, either dry, or in the form of cigarets or tobacco or in any way whatever.

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 36 million, for the week ended June 25, indicate that the highest mortality rate (18.2) appears for New Orleans, and the rate for the group of cities as a whole, 10.1. The mortality rate for the corresponding week last year for New Orleans was 14.1, and for the group of cities, 11.2. The annual rate for eighty-five cities for the twenty-five weeks of 1932 was 12, as against a rate of 12.9 for the corresponding period of the previous year. Caution should be used in the the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

MICHIGAN

Golf Tournament.—The third annual golf tournament of the Wayne County Medical Society, Detroit, will be held at the Thornecliffe Country Club, September 7. There will be also an open air sea food dinner. More than 100 prizes are offered annually at this eighteen hole medal play event.

Women Physicians Present Flag to County Society.—The Blackwell Society, an organization composed of the women physicians of Detroit, presented to the Wayne County Medical Society an American flag, which hung in front of the society's new headquarters, 4421 Woodward Avenue at Canfield, for the first time on Independence Day. The flag measures 10 by 15 feet.

Personal.—Dr. Hugo Erichsen, Birmingham, received the honorary degree of doctor of letters from the College of the City of Detroit. The university also conferred the degree of doctor of science on Dr. Charles G. Jennings, Detroit.——Dr. Bror Hjalmar Larsson was elected president of the alumni association of the Detroit College of Medicine and Surgery, June 16, and Dr. Volney N. Butler, secretary.

New Scarlet Fever Regulations.—Children under 15 years of age having scarlet fever will be required to remain under a longer period of quarantine than persons over that age, in compliance with a new regulation by the Detroit health department. This change was arranged when it was observed that children in the former group are more apt to convey infection to others than persons in the latter group. It has been found practicable to have a shorter period of quarantine for patients having uncomplicated scarlet fever during the summer and autumn, as it has been observed that those who have the disease during July, August, September and October are seldom sources of infection. Patients having uncomplicated scarlet fever, whose date of report is July 1 and thereafter, will be released during the summer and autumn months at the end of twenty-one days, if under 15 years of age. Persons over 15 will be released during this period at the end of fourteen days, provided the release is recommended by the private physician and approved by the health department. A minimum period of twenty-eight days is required for persons having scarlet fever with complications. Special rules will govern the isolation of patients who are diagnosed as having scarlet fever when found to be desquamating.

MINNESOTA

Naturopath Fined.—A fine of $200 was imposed on Fred Ziegler, Elmore, June 15, for practicing healing without a basic science certificate. Ziegler, who claims to be a naturopath, has been making his living by bleeding and cupping patients, the state board of medical examiners reports. He informed the court that he had an eighth grade education in Germany but has no medical education, except that he holds a degree of "doctor of naturopathy" obtained at a school in Minneapolis. Ziegler was fined $500, June 11, 1930, at New Ulm, for practicing without a license (The Journal, July 23, 1930, p. 276).

MISSOURI

Cancer Survey.—A recent survey of the cancer situation in St. Louis and St. Louis County, carried out by the American Society for the Control of Cancer is described in the *Journal of the Missouri Medical Association.* Similar methods were employed for separate surveys in city and county. Records in the city health department indicated that, in 1930, there were 1,078 cancer deaths among white people and 109 among Negroes. By sex the deaths among white persons were fairly equal, 512 in men and 566 in women. Among the Negroes, the proportion was two women to each man. The number of cancer patients treated in the reporting hospitals of St. Louis during 1930 was 2,380. Among this number, 527 deaths occurred. Of the 382 physicians replying to a post card inquiry sent to about 1,750 physicians, 163 reported that they did not treat cancer or they had not seen any cases during 1930, nor did they have any under treatment at this time. Two hundred and nineteen physicians reported that they were treating cancer patients, Jan. 15, 1931, or had seen such patients during 1930. These physicians had seen 1,630 cancer patients during 1930, and had 748 under treatment, Jan. 15, 1931, This would indicate, the report states, that a small percentage of cancer patients in St. Louis is being seen by physicians. The survey brought out that while the general death rate of both the city and the county is declining, the cancer death rate is rising steadily. In 1900, deaths from cancer in St. Louis represented 3.1 per cent of the total mortality, but in 1930 they represented 10.3 per cent. As far as it is possible to determine, the journal states, about 2,400 cancer patients were treated in St. Louis hospitals in 1930; of this group there were more than 500 deaths, of which 134 came to autopsy. The study indicated that many of the cancer patients treated in the city were from Arkansas, Oklahoma, Kansas and South Dakota as well as from southern Illinois and Missouri. In the survey of the county, it was shown that the cancer problem there was approximately the same as in other localities. Because of the close association of the residents of the county with the city of St. Louis, the care and treatment of cancer patients has been more closely identified with the medical and hospital facilities of the city than with those of the county. A special cancer service in the county hospital to include an adequate record system and medically trained social workers for follow-up purposes was recommended. Separate tripartite organizations, including the medical societies, health departments and cancer control committees of the city and county, were urged. These groups would cooperate to provide acceptable and adequate treatment for cancer patients in the earliest possible stage of the disease, in which there is the greatest hope of permanent relief.

NEBRASKA

Fifty Years in Practice.—Dr. Carroll D. Evans, Columbus, was the guest of honor at a dinner sponsored by the Platte County Medical Society, May 26, in honor of his completion of fifty years of medical practice. Dr. John P. Lord, Omaha, was the guest speaker. Dr. Evans was born in Pennsylvania, was graduated from the College of Physicians and Surgeons of Baltimore in 1882 and began practice in Columbus one year later. Two sons, Drs. James North Evans and Carroll D. Evans, Jr., are associated with him in practice.

NEW YORK

Hospital News.—Monthly mental hygiene clinics have recently been inaugurated at Oneida under the direction of the Marcy State Hospital.——Dr. Percy B. Battey, acting medical superintendent of the Institution for Defective Delinquents at Napanoch, has been appointed superintendent of Westfield State Farm, Bedford Hills.

Buffalo's First Mayor.—The Medical Society of the County of Erie and the Buffalo Academy of Medicine devoted the May issue of their joint bulletin to historical accounts of the organizations and of the Buffalo Department of Health in recognition of the one hundredth anniversary of the incorporation of the city of Buffalo, which was celebrated, July 1-10. The first mayor of the city was Dr. Ebenezer Johnson, who was a charter member of the Medical Society of the County of Erie. Dr. Johnson began practice in Buffalo in 1809 and lived there until 1837, when he moved to Tennessee, where he died in 1849. One of the mayor's first acts was to recommend the appointment of a board of health, which was called on to combat an epidemic of cholera within a month after its establishment. The county society was founded in 1821 and the Buffalo Academy of Medicine in 1892.

New York City

Course in Physical Therapy.—Columbia University College of Physicians and Surgeons will offer a three weeks' course in the theory and practice of physical therapy to qualified graduates in medicine, beginning Monday, September 12, and ending Saturday, October 1. This graduate course, which will follow the session of the American Congress of Physical Therapy, will be conducted under the direction of Dr. Norman E. Titus and his associates. Lectures and demonstrations of apparatus will be held the first week, clinical demonstrations, the second, and supervised clinical practice by members of the course, the third. The class will be limited to twelve; the fee is $100.

The Fountain Squad.—More than 100 dealers in refreshments and foods at shore and river resorts and parks were found violating health department regulations during the first ten days of a drive opened, June 1, by the "Fountain Squad" of the bureau of food and drugs of the city health department. Food that was displayed uncovered was condemned and confiscated, and all food-dispensing emporiums were inspected. The sanitary code requires, among other things, that ice cream freezers and frozen custard machines must be frequently dismantled for inspection, that milk pumps must be sterilized every twenty-four hours, that glasses for soft drinks must be sterilized before each use, and especially that all persons who handle food must have an official card certifying that they are free from disease.

OHIO

Alumni Reunion.—Four physicians of the class of 1882 were guests of honor at the 1932 alumni reunion of the University of Cincinnati College of Medicine, June 10: Drs. Edwin W. Mitchell, Benjamin F. Lyle, Cincinnati, Horace D. Price, Parkersburg, W. Va., and John C. Sexton, Rushville, Ind. All are still in active practice. Dr. Dudley W. Palmer presided at the meeting, Dr. Mitchell spoke for the golden anniversary class, and Rabbi James C. Heller made an address on "The Challenge to the Medical Profession." Dr. Alfred Friedlander was elected president of the alumni organization.

Illegal Practitioners Prosecuted.—Within recent weeks the state medical board has obtained convictions in the prosecution of the following illegal practitioners, among others:

D. A. Row, Dayton, who posed as a physician and treated a woman for an infection of the eye, was fined $400 and is confined in the county jail at Dayton.
Herand Robinson, Columbus, unlicensed chiropractor, was given a deferred sentence of one year and placed on probation.
Pauline Bontunipo, Cleveland, was fined $25 and costs and assigned to the probation department, after being found guilty of illegal practice.
O. D. Johnson, Canton, was fined $35 and costs for practicing without a certificate.

At the time of this report, seven chiropractors were under arrest and awaiting trial. The board reported that during 1931 it had made 400 investigations, with 52 arrests and 41 convictions.

Personal.—Dr. John Pascal Sawyer, professor of therapeutics and clinical medicine at Western Reserve University School of Medicine, has been made professor emeritus. Dr. Sawyer has been associated with the university since his graduation there in 1886, except for two years spent in European study.——Dr. Robert T. Leever, South Charleston, has been appointed health commissioner of Pike County, succeeding the late Dr. Oliver R. Eylar.——Dr. Martin H. Fischer, Cincinnati, received the honorary degree of doctor of science at the annual commencement of Wittenberg College, Springfield, at which he delivered the principal address.——Citizens of Uniontown held a celebration, June 2, in honor of the seventy-ninth birthday of Dr. Milton M. Bauer, who began practice in the town immediately after his graduation from Long Island College of Medicine, Brooklyn, in 1880.

PENNSYLVANIA

Bill Introduced.—H. 67-XX proposes to repeal an act approved May 6, 1929, P. L. 1561, authorizing the department of welfare to license and regulate all maternity hospitals except such maternity hospitals as are located in cities of the first and second class.

Society News.—Dr. Frank P. McCarthy, Erie, was elected president of the Northwestern Pennsylvania Medical Society at its annual meeting in Clarion, June 16. Dr. Charles H. Mayo, Rochester, Minn., was among the speakers.——Dr. Samuel Calvin Smith, Philadelphia, addressed a joint meeting of the Columbia, Lycoming and Montour county medical societies at Bloomsburg, June 3, on "Clinical Significance of the Irregular Pulse."——The Pennsylvania Student Health Association was recently organized at a meeting at Pennsylvania State College, State College. Dr. Joseph P. Ritenour, director of health service at the college, was elected president.

Philadelphia

Personal.—Mr. Charles Perry Fisher has retired after fifty years of service as librarian of the College of Physicians of Philadelphia.——Dr. Louis H. Clerf was elected president of the Philadelphia Laryngological Society at the recent annual meeting.

Dr. Keen Willed Brain to the Profession.—Dr. William Williams Keen, who died in his ninety-sixth year, June 7, bequeathed his brain to the medical profession for examination and study. In his will, he directed that Drs. Francis X. Dercum (who died April 23, 1931), William J. Taylor, Jacob Parsons Schaeffer and Willis F. Manges make a postmortem examination. The examination, which was made by Dr. Schaeffer, revealed that the immediate cause of Dr. Keen's death was intestinal obstruction resulting from adhesions that followed an operation performed several years ago. Dr. Keen bequeathed substantial amounts to the aid association of the

Philadelphia County Medical Society, the College of Physicians of Philadelphia and Jefferson Medical College. A fund was also set aside in the will to establish at Brown University, Providence, R. I., of which Dr. Keen was a graduate, the Corinna Borden Keen Research Fellowship Fund for the Advancement of Pure Science.

SOUTH DAKOTA

State Medical Election.—Dr. Edward W. Jones, Mitchell, was named president-elect of the South Dakota State Medical Association and Dr. John R. Westaby, Madison, became president at the annual meeting at Watertown in June. Dr. William G. Magee, Watertown, was elected vice president and Dr. John F. D. Cook, Langford, reelected secretary. The next meeting will be held in Huron.

WEST VIRGINIA

State Medical Election.—Dr. Delivan A. MacGregor, Wheeling, was elected president of the West Virginia State Medical Association, at the annual meeting in Parkersburg, June 21. Vice presidents elected were Drs. James A. McClung, Richwood, and Thomas L. Harris, Parkersburg. The annual meeting for 1933 will be held in Charleston.

GENERAL

Society News.—The annual roll call of the American Red Cross will be held between Armistice Day, November 11, and Thanksgiving, November 24.——The annual meeting of the Polish Medical and Dental Association of America will be held in Wilkes-Barre, Pa., August 18-20.——Dr. John L. Pomeroy, Los Angeles, was chosen president-elect of the western branch of the American Public Health Association at the annual meeting in Denver, June 11. Dr. Amos L. Beaghler, Denver, became president.

Study of Therapeutic Malaria.—Methods of procuring and keeping pure strains of benign tertian malaria for use as a therapeutic agent in the treatment of dementia paralytica are the subject of an investigation by the U. S. Public Health Service cooperating with the South Carolina State Hospital, Columbia, S. C. With the increasing use of this method of treatment, it has been found that psychiatric hospitals frequently lose the pure strain of malaria, and the object of the present investigation is to devise a method of shipping infected mosquitoes in order to make the treatment available in any place. Bruce Mayne of the public health service is in charge of the work.

Williams and Wilkins Purchase William Wood and Co.—The Williams and Wilkins Company of Baltimore announces the purchase of the inventory assets of William Wood and Company, medical publishers, New York, including good will and use of the Wood name and imprint. The Wood business has been in the hands of an executor since the death in October, 1931, of Gilbert C. Wood, last surviving member of the family with an interest in the firm, which was established in 1804 by Samuel Wood. The firm name will be perpetuated and for the present the business will be conducted from 156 Fifth Avenue, New York, although it will probably be moved to Baltimore eventually. The list of titles of the combined concerns approximates 600.

Warning Against Swindler.—A New Mexico physician sends a warning to physicians concerning a swindler who requests a roentgenogram of a crippled hand. He presents papers bearing the name of the Maryland Casualty Company of Baltimore. After the roentgenogram is made, he gives the physician a check drawn by the Baltimore firm on its own check paper, invariably for $36.50. The victim gives him the difference between that amount and his charge for the service and learns later from the Maryland Casualty Company that he has been swindled. The man's deformity is unmistakable, according to the report. The middle three fingers of his right hand are missing, leaving him with only the thumb and little finger. The man, who uses various names, is said to appear intelligent, and the letters and blank forms he uses are apparently perfect forgeries.

Recommendations Concerning Milk.—At the recent meeting of the State and Provincial Health Authorities of North America in Washington, D. C., the committee on milk made recommendations concerning milk production. The committee disapproved the use of the term "natural milk" to denote "raw milk," arguing that pasteurized milk is as much natural milk as the raw product. It approved the process of short time-high temperature pasteurization and upheld the requirement of the standard milk ordinance of the U. S. Public Health Service that any firm which handles more than one grade of milk must use separate equipment for each grade. The committee also considered the practice of recombining skimmed milk and cream and expressed the opinion that it should be forbidden unless both the milk and cream come from inspected sources and unless the product is labeled to show its true character.

Primer on Rheumatism.—The American Committee for the Control of Rheumatism prepared in connection with its exhibit at the New Orleans session of the American Medical Association a "rheumatism primer" summarizing the present understanding of the diagnosis and treatment of the various forms of chronic arthritis. The committee announces that the primer, together with a chart presenting an outline of the factors influencing the course of the disease and a concise statement of the present concept of the disease, may be obtained from the chairman, Dr. Ralph Pemberton, Philadelphia, or the secretary, Dr. Philip S. Hench, Rochester, Minn. At the semi-annual meeting of the committee, May 11, it was decided to hold a conference every year, preferably in connection with the meetings of the American Medical Association. Such a conference was held, May 9, in New Orleans (The Journal, May 7, p. 1668).

American Association for the Advancement of Science—Section N.—The medical program for the summer meeting of the American Association for the Advancement of Science at Syracuse, N. Y., June 20-24, was arranged jointly by Section N (the medical sciences) of the association, the Onondaga County Medical Society and the Syracuse Academy of Medicine. A demonstration session was held, June 22, in Lyman Hall of Natural History and the following program of lectures was presented, June 23:

Dr. Robert Elman, St. Louis, "Treatment of Acute Intestinal Obstruction: Recent Experimental and Clinical Studies."

Dr. Abraham Clement Silverman, Syracuse, "Epidemiology of Poliomyelitis as Based on Syracuse Experience."

Drs. James R. Wilson, Tyree C. Wyatt, Orren D. Chapman and J. H. Bennett, Syracuse, "Studies in Allergy: The Effect of Fasting on Anaphylactic Shock in Guinea-Pigs."

Dr Edward N. Packard, Saranac Lake, N. Y., "Value of Surgery in the Treatment of Pulmonary Tuberculosis."

FOREIGN

Centenary Dinner.—The British Medical Association will hold its centenary dinner at Albert Hall, London, July 28, during the annual meeting. Lord Dawson of Penn, president-elect of the association, will preside and the Prince of Wales will be the principal guest.

International Prize Offered.—The Medical Society of Evian-les-Bains announces that a second series of "Medical Days" will be held in Evian in September, 1933. Professor Lemierre will preside and the subject for study will be "renal insufficiency." For this occasion the "Incorporated Society of Mineral Waters of Evian-les-Bains" will offer an international prize of 10,000 francs, in honor of the memory of the hydrologist Chiais, for the best original work on "the pathognomonic value of tests for induced diuresis." The manuscripts, written in French and unsigned, must be sent to the headquarters of the Société des Eaux Minérales d'Evian-les-Bains, 21, rue de Londres, Paris, before May 15, 1933. Information concerning the conditions of the award may be obtained from the society at that address.

Proposed Institute for Plague Research.—In order to carry out a program of research on plague, the establishment of a Plague Research Institute in Yulin, China, was recommended in a report in the *Chinese Medical Journal* of the investigation of an outbreak of plague late in 1931. Yulin was considered the best location for this institute, because it is practically in the center of the plague focus. It was recommended that the institute have its own power station, stables, water supply, bath, dwelling houses, laboratory and library. The recent outbreak of bubonic and pneumonic plague in Shansi and Shensi was unusually extensive and advanced into districts heretofore unaffected. It resulted in a special investigation by a mission sent by Dr. J. Heng Liu, director of the national health administration. In Lin Hsien County alone, it was said, eighty-five villages were infected, with more than 1,000 deaths. One of the most severe outbreaks occurred in the villages around Muton Ui. The first report of Dr. Percy T. Watson, director of the hospital at Fenchow, Shansi, showed that 100 villages were infected (The Journal, Dec. 19, 1931, p. 1901).

Deaths in Other Countries

Bernhard Laurits Frederick Bang, professor of pathology and therapy in the Royal Veterinary and Agricultural College, Copenhagen, Denmark, died June 22, aged 83. He was known especially for the isolation of the bacillus of infectious abortion, sometimes called "Bang's bacillus."

Government Services

Change of Station in the Navy

Lieut. Robert K. Y. Dusinberre from navy medical school, Washington, D. C., to the first brigade, U. S. Marines, Haiti; Lieut. Harold O. Cozby from naval hospital, Washington, D. C., to Asiatic Station; Lieut. Clifford A. Swanson from the naval dispensary, navy department, to Asiatic Station; Lieut. Edward M. Harris from the first brigade, U. S. Marines, Haiti, to the naval hospital, Boston; Lieut. Clark T. Alexander from the U. S. S. *Asheville* to the marine detachment, Peiping, China; Lieut. Walter F. J. Karbach from the marine detachment, Peiping, China, to the U. S. S. *Asheville;* Lieut. Ralph E. Fielding from the fourth regiment, U. S. Marines. China, to the receiving ship at New York; Lieut. David H. Davis, from the marine corps base, San Diego, Calif., to the Asiatic Station; Lieut. Otto L. Burton from the naval radio station, San Juan, P. R., to the naval hospital, Parris Island, S. C.; Lieut. Comdr. Samuel H. White from the naval medical school, Washington, D. C., to the second brigade, U. S. Marines, Nicaragua; Lieut. Comdr. Ely L. Whitehead, from navy hospital, San Diego, Calif., to Asiatic Station; Lieut. Comdr. Charles H. Savage to naval hospital, Portsmouth, N. H.; Comdr. Claude W. Carr from naval station, Guantanamo Bay, Cuba, to naval hospital, naval training station, Great Lakes, Ill.; Lieut. Robert C. Boyden from naval training station, Norfolk, Va., to Asiatic Station; Lieut. Benjamin E. Twitchell from naval hospital, Mare Island, Calif., to U. S. S. *New York;* Lieut. Craig B. Johnson from submarine base, New London, Conn., to the submarine base, Pearl Harbor, T. H.; Lieut. Bruce V. Leamer, from naval training station, Great Lakes, Ill., to Asiatic Station; Lieut. Comdr. Ruskin M. Lhamon, from naval hospital, Mare Island, Calif., to naval station, Guantanamo Bay, Cuba; Lieut. Comdr. Paul Richmond, Jr., from naval medical school, Washington, D. C., to Asiatic Station; Lieut. Frederick G. Merrill, Jr., from naval station, Olongapo, to the fourth regiment, U. S. Marines, Shanghai; Lieut. Glenn S. Campbell from naval hospital, Washington, D. C., to naval station, Guam; Lieut. Edwin B. Coyle, from San Diego, Calif., to naval station, Guam; Lieut. Clifford D. Hamrick, from New London, Conn., to naval station, Guam; Lieut. Thomas Jackson, Jr., from League Island, Philadelphia, to Asiatic Station; Lieut. Rafael A. Vilar, from Parris Island, S. C., to naval radio station, San Juan, P. R.; Lieut. Comdr. Benton V. D. Scott, from submarine base, Pearl Harbor, T. H., to naval hospital, San Diego, Calif.; Lieut. Comdr. Jonathan E. Henry, from Naval Academy, Annapolis, Md., to the American Scientific Mission, Port au Prince, Haiti; Lieut. Comdr. Sterling S. Cook, from the mission, Haiti, to the naval medical school, Washington, D. C.

Health of Troops in Shanghai

Unsatisfactory quarters, contact with infectious diseases among civilians and inclement weather contributed to the spread of an epidemic of influenza and other respiratory diseases among the troops which were sent to Shanghai from the Philippines in February. The epidemic reached its height about March 10. As a result, the annual admission rate for that period was 815 per thousand. The report states that it was difficult to prevent the spread of infections, as the troops had to be billeted in cold, drafty buildings and the city was filled with war refugees, many of whom were camped near the billets. An acute outbreak of measles occurred during the five weeks ended April 30. During the first eight weeks there were five cases of smallpox. The sick were cared for in the Shanghai General Hospital and the Municipal Isolation Hospital until a military hospital was opened, February 28. Three deaths occurred in April, two from pneumonia following measles and one from streptococcic meningitis.

Dinner to Colonel Webb

Col. Louis H. Webb, recently transferred from U. S. Veterans' Hospital No. 99 at Excelsior Springs, Mo., to the veterans' hospital at Muskogee, Okla., was the guest of honor at a dinner given by the Chamber of Commerce and the Federal Employees' Association of Excelsior Springs, June 14. A writing set was presented to Colonel Webb by the hospital personnel and a resolution commending his administration was adopted by the chamber of commerce.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 18, 1932.

British Spas

The movement to encourage the use of British spas, which has been brought about by the financial depression, has been reported in previous letters. The medical advisory committee of the British Health Resorts Association has issued a statement which declares that it is not sufficiently recognized that in Britain there are waters and bath establishments quite as valuable as any to be found abroad for most of the ailments commonly treated at such places, and that some springs are quite remarkable. The British spas are distinguished from those of the continent by their invigorating and tonic quality imparted by the Northern island climate. In the North, Strathpeffer, Buxton and Harrogate offer a tonic summer treatment. Woodhall spa is more sheltered. At the Welsh spas and at Leamington, Cheltenham and Droitwich in the Midlands, tonic and sedative influences are combined. Bath is the warmest and most sedative of British spas and eminently suited for treatment in winter. The hot springs, rising at 120 F., were used by the Celts and the Romans. At Bridge of Allan, in the lowlands of Scotland, are calcium waters. The warm blue waters of Buxton have been used since the sixteenth century. The salines of Cheltenham and Leamington are suitable for spa treatment at all seasons for delicate and elderly persons and those who have returned from the tropics. The brines of Droitwich are ten times as strong as sea water. Harrogate has a remarkable outcrop of sulphur, saline and iron springs.

Church Conference on Birth Control

A committee of the lower house of convocation of Canterbury, discussing the subject of birth control, notes that the firm tone of previous conferences has been qualified since the conference of 1908 described "all artificial means of restriction as demoralizing to character and hostile to national welfare." The report regrets, however, the statement of a majority of the bishops that "other methods than abstinence" may be used in some circumstances. The present conference deprecates this admission and says: "If directions of this kind are to be given by the church, we are convinced that the ideal of the Christian life, as one under discipline, must be upheld at all costs." However, a minority of the conference agrees with the previous pronouncement of a majority of the bishops that, "safeguarded by the many limitations and qualifications laid down, the use of contraceptives may be right in certain cases."

Life Insurance and Venereal Disease

At the Medical Society for the Study of Venereal Diseases, Mr. H. E. Melville opened a discussion on the attitude of life insurance societies to venereal diseases. He gave the general principles according to which his office (the National Provident Insurance Society) acted. If an applicant had had repeated attacks of gonorrhea, even if each attack had been cured, he was charged extra. For one attack which had been cured, ordinary rates would apply. But if he had stricture which had not been cured, he would either be regarded as not insurable or be definitely loaded. A syphilitic person would be accepted only under the following conditions: (1) He should have been thoroughly treated; (2) several years should have elapsed from the date of infection and treatment, and no symptoms should have developed in the meantime; (3) his physical condition, family history and habits should be satisfactory. Even with these conditions, ordinary terms would not be granted. A man who acquired syphilis at or after 40 was considered a worse risk than one who acquired it at a younger age.

In the discussion that followed, doubt was expressed whether the modern treatment of syphilis was altogether an advantage, as it might impair the vitality of essential organs. The optimistic view which Sir Jonathan Hutchinson took of syphilis treated by long continued small doses of mercury was quoted and also his statement that he would like to run an insurance company entirely for the syphilitic, as it would make a good profit, seeing that the syphilitic would henceforth live a careful life.

Protection Against Electrical Shocks

The ministry of health has issued a memorandum for distribution to hospitals, nursing and convalescent homes and clinics drawing attention to the dangers from the use of electrical apparatus, which are increased by the tendency for hospitals to change over from their own direct current of low voltage to the standard alternating current of 230 volts. A fatality has recently been reported from electrical treatment of a patient in bed. It is pointed out that an iron bedstead should never be in such a position that by contact with radiator pipes or even with an "earthed" wireless receiver it may act as a means of grounding the patient. Precautions are necessary in view of the increased use of radiant heat baths, resuscitation cradles, thermal pads for eye and ear work, and similar appliances receiving current from the main. Where apparatus is of the nonearth-free type, patients undergoing treatment in the same room should not be within reach of one another. It is suggested that under the conditions existing in many wards—wooden floors and small chance of contact with ground metal—electrical safety is best secured by insulating apparatus instead of grounding it. But where there are conducting floors the metal work of the apparatus should be grounded and care taken to insure the efficiency of the connections. The source of supply for heat treatment by electrothermal compresses should always be of low voltage. If patients wearing wireless head phones are undergoing electrical treatment or are in a position to handle electrical apparatus, attention should be paid to the insulation of the output circuit to which the phones are connected, which can be done by a double-wound isolating transformer. Radiant heat baths are a source of danger, against which three precautions should be taken: (1) An internal mesh screen should be used to cover the lamps and holders; (2) the holders should be of insulating heat-resisting material; (3) metal work should be grounded. In projectors for light treatment, live conductors are exposed within the reflectors, and this is true also for arc lamps. Though it is not likely that the live parts will be touched while the apparatus is in use, mesh guards would minimize the risks to the operator. The metal work projectors should be grounded. It is advisable to insure against interruption of the current while the patient is being treated. While current of considerable densities may flow without discomfort provided efficient contacts are made, a sudden interruption, such as might be caused by a fuse blowing out, a bad contact in a plug fitting, or a breakage of a flexible connection, would produce shock which might be severe. Therefore the use of sets which are not isolated electrically from the main supply is deprecated.

Diathermy apparatus is of two kinds: In one the patient is subjected to a low voltage high frequency current; in the other, to a minute current at high pressure and frequency. In both cases the necessary transformation isolates the patient from the mains, but in both cases an intermediate low frequency current operates at pressure ranging from 2,000 to 6,000 volts, which is sufficient to cause severe shock. Preference is given to designs in which the patient's circuit is isolated from the intermediate circuit, the spark gap is mounted inside the cabinet, and the door of the cabinet is so interlocked with the source of the main supply that its opening disconnects the latter. It is recommended that all apparatus be inspected regularly by experts.

PARIS

(From Our Regular Correspondent)

June 8, 1932.

Combined Antidiphtheria and Antityphoid Vaccination

Mr. Dopter, a bacteriologist and a former director of the army medical department, presented recently to the Academy of Medicine an important communication on the reinforcement of immunity, in antidiphtheria vaccination, by the association with it of antityphoid vaccination. His researches were begun in 1930, and the army, in which vaccinations are compulsory, furnished an excellent field of observation. He first employed antidiphtheria vaccination by means of the Ramon anatoxin, in three injections, given at intervals of fifteen days, which enabled him to secure 95 per cent of immunization, as confirmed by the Schick test and the determination of the antitoxin content of the blood serum. He improved these results by employing a new and richer anatoxin, in accordance with the experiments carried out by Ramon, Debré and Mozer, at the Hôpital maritime des enfants, at Berck. With two injections, the proportion of successful immunizations was raised to 98.6 per cent. Two garrison outbreaks permitted him to raise the proportion of immunizations still further by combining, during one outbreak, antityphoid vaccination with the use of the new anatoxin. Mr. Dopter presented to the academy his most recent statistics. He applied the new method to twenty-nine regiments affected by the outbreak of diphtheria. Combined vaccination was applied to the young recruits, on their arrival, but only to those presenting a positive Schick reaction. The author observed that the persons vaccinated did not contract diphtheria, and that, furthermore, the outbreak of diphtheria soon died out. Of a total of 5,923 persons vaccinated, only twelve contracted diphtheria, from which number seven should be deducted, as they had been attacked from two to fifteen days after the third injection, before immunity had been established, which gives a percentage of failures amounting to only 0.084, whereas, in the other regiments not vaccinated, the percentage of patients reached 1.07. These comparative percentages are instructive. Furthermore, in order to obtain exact information as to the increase of immunity due to the addition of antityphoid vaccine, the percentage of antitoxin contained in the blood serum of fifty-one subjects completely vaccinated was determined, and it was found that in all, the antitoxin content was greater than one thirtieth of an antitoxin unit, which corresponds to a negative Schick reaction. In 35 per cent, the antitoxin content ranged between 0.1 and 1 unit. In many, the antitoxin content exceeded 1 unit, attaining sometimes even 20, 30 and 40 units. By an equal number of antitoxin units, the combined vaccination, with two injections of new anatoxin, proved superior in its effects to the vaccination with the old anatoxin, and even with the new vaccination when employed alone. The army milieu, in which, by reason of the needs of instruction, there is a great advantage in being able to reduce the number of injections, cannot help but benefit from the effectiveness of the anatoxin with the increased antitoxin content. Whether one uses this anatoxin alone after the antityphoid vaccine has been applied, or whether one uses it in combination with the antityphoid vaccine, antidiphtheria immunity can be assured by two injections with a degree of success at least equal to that secured by the ordinary method. Mr. Dopter believes, therefore, in the advantages of this method, which constitutes a potent means of combating endemic diphtheria and the spread of epidemics. Its application is facilitated by the law of Dec. 21, 1931, which has made it compulsory in the army.

The Seventeenth Congress of Legal Medicine

The seventeenth Congress of Legal Medicine was held in Paris under the chairmanship of Professor Raviart of Lille. The session was opened by Mr. Chiappe, prefect of police in Paris, who, in his address, demanded that psychiatry define the social status of half-wits, who, sometimes dangerous, are allowed their full liberty and are the authors of more than half the crimes committed. Professor Raviart, in turn, discussed the question of crimes committed by the insane, and called attention to the difficulties that prevent, under the present state of legislation, the early discovery of the insane and the employment of measures of prophylaxis; in particular, by reason of perverted public opinion excited by the threat and the fear of arbitrary and abusive interment, which fact often discourages any initiative on the part of physicians or alienists. As for the police, it waits always for the crime to be committed before it takes any action. Among other communications, Prof. Etienne Martin of Lyons made a remarkable medicolegal study of the lesions occurring in death from drowning. Naville and de Morsier took up the problem of the possible rôle of cranial traumatisms in the development of Parkinson's syndrome. This appeared, in 25 per cent of the cases, as a complication of epidemic encephalitis. They hold that grave traumatisms may cause this encephalitis to appear, but also that it may be awakened by latent micro-organisms, as sometimes results from smallpox vaccinations. They considered also the rôle of purely psychic traumatisms, especially in aged persons. Mr. Génil-Perrin discussed in his paper the relations of psychoanalysis to legal medicine. If properly carried out, psychoanalysis may perform a useful reeducative task in removing a person from the domination of the subconscious to a state of lucid consciousness. It may bring about recoveries and make it possible to restore full freedom to patients who have regained their mental poise. Mr. Mauclaire presented a paper on scapulohumeral periarthritis due to the presence of intra-articular calcifications. Professor Balthazard spoke on remote bone changes in persons with amputated limbs, resulting, more particularly, from a static disequilibrium of the body. Mr. de Laët of Brussels called attention to nuclear reactions due to toxins.

The First French Woman to Occupy a Chair of Medicine

Mlle. M. Condat, who, in 1923, as the result of a competitive examination, became an associate professor of medicine, the first French woman to occupy such a post, has now been appointed to a chair of therapeutics at the Faculté de médecine de Toulouse. While serving as intern in the hôpitaux de Paris, Mlle. Condat was chiefly under the tutelage of Professor Comby. In 1916, she defended her doctor's thesis on leukocytolysis and fragility of the leukocytes. Mlle. Condat is a member of the Societé de pédiatrie de Paris and has published numerous articles on diphtheria, cerebrospinal meningitis, and infectious diseases in general. At Toulouse, since 1923, her work of instruction has dealt with experimental and general pathology, and medical pathology, while, at the same time, she has had charge of the Laboratoire de chirurgie at the Hôtel-Dieu, Paris.

BERLIN

(From Our Regular Correspondent)

June 6, 1932.

The Founding of the University of Würzburg

During the middle of May, special ceremonies were begun at Würzburg in commemoration of the founding of the university in 1582 by the bishop-prince Julius Echter v. Mespelbrunn. One cannot think of the university without recalling the Julius Hospital, which the bishop-prince established a few years before the university was founded, although the original hospital structure has not been preserved. This hospital, with its beautiful old garden, its old pharmacy typifying an early rococo style of architecture, and its wine cellar of international fame, seems to breathe the spirit of the chief city of Lower Franconia: the fantastic baroque mingled with the more somber aspects of medicine.

The university owes its fame chiefly to the faculty of medicine, along with the department of the natural sciences. From this city, in which Albertus Magnus and Paracelsus spent some time, sprang some of the greatest names in the medicine and surgery of this period: the archeologist Athanasius Kircher, who searched for the causative agent of the plague; the families that produced so many eminent anatomists and surgeons: v. Siebold, Döllinger, Virchow, which latter established in the Julius Hospital the first pathologic institute in Germany; E. v. Bergmann, Franz Hofmeister, Leube, and the great professor of otology Anton v. Tröltsch. Other famous names are Haeckel, the zoologist v. Leydig, the botanist Julius Sachs, the chemist Emil Fischer and Roentgen. Many others have achieved fame in the field of the natural sciences.

At the opening of this century, the University of Würzburg had about 1,300 students; the attendance has now increased to more than 3,000. The university has now more than a hundred professors, and a library of 600,000 volumes, including 2,000 incunabula. It has an important historical museum of art and a great many institutes devoted to the natural sciences and to medicine. The Luitpoldkrankenhaus, with its six buildings, one of the most modern hospitals in Germany, was completed in 1924. The ceremonies were held under the presidency of a medical man, the pharmacologist Professor Flury, who emphasized that the celebration was not in honor of Würzburg alone but of the whole German people, and, indeed, one might say, of the whole world of science.

Death of Max Rubner

Prof. Dr. Max Rubner died, April 27, aged 77. He was one of the most eminent physicians of Germany; one of those who established the trend of medical thought for a whole generation of physicians. Rubner was a hygienist and a physiologist and held successively a chair in both subjects. A mutual illumination of hygienic and physiologic problems gives his great works a peculiar character. Especially original were his achievements in the field of nutrition, in which he continued the work of his teacher Voit (of Munich).

In a noteworthy work on the isodynamics of food products, Rubner was the first to show that the quality of food substances is not determined by the amount of oxygen required for their combustion but by their calory content. He showed further in his fundamental tables that the calory production of proteins, fats and carbohydrates can be given in figures with considerable accuracy. On the basis of calories (that is, on Rubner's idea), food computations have since been reckoned in all civilized countries. In collaboration with Thomas, Rubner established that for man and animals proteins do not all have an equal value but that the biologic value of protein bodies varies considerably. This discovery has become one of the most important bases of the present-day theory of nutrition. During the war he served as nutrition expert of the German government and in that capacity gave, in 1919, at the conference at Spa, his opinion on the effects of the food blockade. In recent years Rubner has done little research work but in a number of academic treatises has shown his depth of insight into practical nutritional problems. Furthermore, in a number of special articles he has criticized the preposterous claims and conceptions set up by would-be specialists in the field of nutrition. These writings of the master have served an important purpose, and merit our gratitude.

Rubner was born in Munich and studied under Voit and also under the physiologist Karl Ludwig. After the death of Robert Koch, he was given the chair in hygiene and later the chair of physiology. He created the large new Physiologic Institute, which has become a research center of international scope. From 1910 to 1911, he was rector of the university. He served as perpetual secretary of the Prussian Academy of Sciences. He founded and was an honorary member of the Institut für Arbeitsphysiologie of the Emperor William Society for the Advancement of Science. Rubner possessed extraordinary energy. Of his numerous publications, a book on "Kraft und Stoff im Haushalt der Natur" has become known far beyond professional circles.

Professor Volhard's Sixtieth Birthday

On May 2, Professor Volhard, clinician of Frankfort, celebrated his sixtieth birthday. Volhard became prominent in the field of kidney and heart disease. He proposed also the specific gravity test for the functioning of the kidneys. He and Fahr published an important work on the clinical aspects of Bright's disease, and likewise a comprehensive work on the bilateral hematogenic disorders of the kidney. In the field of diseases of metabolism, he attracted attention by the discovery of a fat-splitting ferment in the stomach. Volhard was born in Munich. After graduation in medicine, he joined the faculty of the University of Giessen and became director of the municipal hospitals in Dortmund and Mannheim, and ordinarius in Halle in 1918, whence, in 1927, he removed to Frankfort-on-Main.

The First Appendicectomy

Prof. Hermann Kümmell, surgeon of Hamburg, celebrated his eightieth birthday, May 22. Kümmell was the first surgeon in Germany to perform the well known appendix operation (in 1889). He likewise pointed out ways for the elimination of cancer, for combating tuberculosis, and for the recognition of unobserved injuries of the spinal column. His researches have aided also in the spread of antisepsis and asepsis. He devoted himself primarily to surgery of the abdominal cavity and to disorders of the kidneys and of the urinary system. The handbook of surgery published by Kümmell in collaboration with Bier and Braun is known the world over.

Multiple Sclerosis as an Infectious Disease

According to an address delivered by Dr. Steiner of the Heidelberger Psychiatrische Universitatsklinik, at a meeting of the Aerztlicher Verein in Frankfort-on-Main, the former conceptions of the origin of multiple sclerosis are no longer tenable. Multiple sclerosis must now be regarded as an etiologically uniform chronic infectious disease of the central nervous system and belongs to the large group of encephalitides. By a new method, Steiner demonstrated the presence of parasites in sections of tissues in seven out of thirty-five cases of multiple sclerosis. In comparison with dementia paralytica and in analogy with it, in multiple sclerosis scientific proof demands a case in which there is an abundance of spirochetes. This postulate has recently been fulfilled by Steiner. Steiner presented diapositives and microscopic preparations derived from a case of multiple sclerosis in which, after a twelve year remission, the patient died during an acute secondary attack that lasted three months.

Experimental Production of Articular Rheumatism

Before the Berliner Medizinische Gesellschaft, Professor Gudzent demonstrated recently rabbits in which, for the first time, it had been possible to produce, experimentally, articular rheumatism by the injection of protein-containing extracts of food products or, in some instances, by the injection of the food products themselves. The resulting inflammation of the joints was, as Gudzent showed, in its clinical course identical with articular rheumatism in man. A precondition, however, is that the animals be made allergic by previous treatment with these substances. These observations furnish important support for Gudzent's view, which he reached on the basis of clinical manifestations in man, that one type of articular rheumatism in man is to be regarded as an allergic reaction to the effects of inactive antigens. Further research will be necessary to discover the causal relation of these antigens to the various forms of articular and muscular rheumatism and to all other disorders designated in human pathology as of rheumatic origin.

VIENNA

(From Our Regular Correspondent)

May 8, 1932.

The Significance for Man of Paratyphoses in Animals

Paratyphoid is a disease that, while it resembles in its course abdominal typhoid, is not produced by genuine typhoid bacilli though by a similar organism: paratyphoid bacilli. As Dozent Dr. David, of the Tierärztliche Hochschule in Vienna, recently brought out, the conception "paratyphoid" has been extended so as to include meat poisoning in man caused by Bacterium enteritidis, which resembles closely the paratyphoid bacillus. Recent researches have shown that in many animals similar processes develop, which are now fairly well known, being termed "paratyphoses." Certain types of paratyphoid bacilli are found chiefly in man; other types mainly in animals, and still others in both man and animals, as causative agents of disease. The paratyphoses of animals, which are of importance to man, are connected with the epidemiology of the so-called food poisonings. These, for the most part, are caused by bacteria of the paratyphoid-enteritis group. The usual mode of infection is that the meat or the milk of animals with diseases due to specific organisms is used for human consumption. Professor Gärtner, in 1888, demonstrated that the bacilli from the flesh of a cow and from the spleen of a man who had been taken sick and had died after eating such meat were identical (Bacillus enteritidis Gärtner), and that they were closely related to the Schottmüller human paratyphoid bacillus. Also the milk of cows so diseased produced gastro-enteritis in man. The most important paratyphoses of animals are infectious abortion of horses and sheep, typhoid of young pigs (similar to human typhoid), not to be confused with hog cholera; typhoid of calves, typhoid of chickens and "chick dysentery," and typhoid of mice and rats. The hygienic importance of these disorders for man is apparently slight, but nevertheless acute cases of gastro-enteritis in man have been traced to animals. Much more dangerous for man, however, are the paratyphoses of adult cattle and sheep, because they furnish disease-producing milk and meat. They may function also as carriers of bacilli and thus infect their stall-mates, even after they have recovered. Most meat poisonings have their origin in the meat of adult cattle or sheep affected with enteritis. (In Westphalia, more than 2,000 persons became ill following ingestion of the meat of sheep suffering from intestinal disease.) Especially dangerous for man are the mild forms of paratyphosis in which clinically there is scarcely any evidence of disease, so that the meat or the milk is used as food without thought of danger. Direct contagious infection of man with such paratyphoses has not been observed. Interest attaches to reports of disorders following ingestion of goose meat and goose liver, while Scott has reported from England seven epidemics of enteritis in man, which were caused by eating duck eggs (during the period 1928-1931). Also the so-called fish poisonings appear to be caused, for the most part, by paratyphoid-enteritis bacilli. In Kiel and Lübeck (Germany), 300 persons became ill a few years ago, following ingestion of smoked mackerel, during which outbreak both the Gärtner bacillus and the closely related Breslau bacillus were found. It appeared that the infection was due to contamination of the fish by infected water or during transit. The prophylaxis of poisonings resulting from eggs, poultry and fish must be left, for the present, to the consuming public, thorough cooking offering the best protection. For the prevention of the transmission of paratyphoses by slaughtered animals, however, there are, in many countries, laws that must be observed by supervising veterinarians. In Austria, the law requires that every animal, before it is slaughtered, must be examined by a veterinarian; but since the clinical and the anatomic-pathologic examinations do not suffice, in 1912 a bacteriologic examination of meat destined for human consumption was introduced, which must be carried out whenever there is a suspicion that the meat of a given animal might give rise to poisonings. This provision applies to animals that, before slaughtering, show evidence of an impaired general condition without recognizable cause, or if there is a suspicion that septicemia or some similar condition exists. If an examination of an animal appears indicated, specimens of the muscular tissues, lymph glands, spleen, kidneys and liver must be examined bacteriologically, in the usual manner. If examination of these specimens does not show that the meat is wholesome for man, the whole animal carcass must be destroyed. That Austria has not suffered from any extensive outbreaks of this nature, in recent years, is doubtless due to this precise inspection system.

Electrosurgery in Sarcomas

At the same session, Dozent Dr. Mandl discussed the advantages of electrocoagulation in operations on malignant tumors. At the moment of the electrical incision or the coagulation of the tissues, the blood vessels and lymph paths are closed and thus dissemination is prevented. The operative field is sterilized by the heat, and hemorrhage and shock are only slight. The tissue-preserving action of the electrosurgical procedure is especially marked in cases that, with ordinary surgical therapy, would require "amputation" or extirpation. This is due to the fact that the electric knife effects such a demarcation between healthy and pathologic tissue that it is possible to remove radically the tumor tissue. Dr. Mandl presented three cases of this kind: The first patient, a woman, had undergone subperiosteal enucleation and resection of the ulna on account of a myelogenic sarcoma. The operation dated back three years, roentgen after-treatment having been given. A recurrence developed six months later. The tumor grew rapidly toward the soft parts and toward the radius. The patient refused amputation of the lower arm, which was considered necessary. The ulcerated tumor was given electric coagulation treatment by Mandl, and there remains only the radius with a few ligaments. The wound is diminishing rapidly in size without Thiersch flaps. A year after the operation the patient is able to work and has had no recurrences. The second patient presented a large sarcoma of the right scapula. An opening was made with the electric knife and all the tissues up to the healthy area were coagulated; the flap was put back in place and sutured. The wound healed rapidly. The third patient suffered from spindle-cell sarcoma involving the whole medial portion of the foot, far into the plantar area and the dorsum pedis. Following electrical excision and coagulation into the healthy tissues, rapid healing took place; in this case a Thiersch flap was used. There was rapid general recovery. No patient has had a recurrence as yet, although, to be sure, only six months has elapsed.

General Irradiation with Roentgen Rays in Polycythemia

At a recent meeting of the Gesellschaft der Aerzte of Vienna, Prof. Dr. Sgalitzer presented a woman patient, aged 60, who four years previously had been affected with a severe polycythaemia rubra, having presented 9,500,000 erythrocytes, more than 15,000 leukocytes, prostration, headache, dizziness and incapacity for work. At that time local irradiations of the osseous system were given, but without success. High doses were employed, which were expensive from the standpoint of time and material and thus were impracticable. Sgalitzer decided, therefore, to employ in this case general irradiation, as recommended by Professor Teschendorf for leukemia, since this method had given him better results (longer interval) in leukemic patients than he had secured from local irradiations. General irradiation is applied by Sgalitzer in a specified manner, a filter of heavy metal being used alternately, from the dorsal and the ventral body surface, on five or six successive days. There follows then a longer interval with exact control of the blood picture, in which the leukocytes should receive special consideration, as they diminish more rapidly than the erythrocytes. The leukocytes should not be allowed to drop below 3,000-4,000. If that does occur, a longer interval must be taken. It will be seen that the recovery of the white blood corpuscles requires only a short time (from six to twenty days). Patients react in varying degrees to general irradiation. Often from five to six irradiations suffice, while, in other instances, many times that number are required. Also the by-effects after the irradiation vary in intensity and quality, though often they are entirely absent. Erythrocythemia is favorably influenced by general irradiation. The number of red blood corpuscles drops rapidly; the subjective symptoms disappear over a long period, so that the unfavorable prognosis that existed before the introduction of roentgen therapy may now be regarded as fairly good. The patient presented was practically cured at the end of two months and has had no remissions during the past four years, whereas local irradiation had often been applied without effect. Also in other cases, which to be sure have not been under observation so long, favorable results have been achieved. While it may not be justifiable to speak as yet of an actual cure, at least long remissions have been brought about. In one case, a recurrence treated with a repeated irradiation soon resulted in a normal blood picture. During the discussion that followed this demonstration, many authors who had had an opportunity to try the method emphasized its usefulness and its superiority over older forms of therapy (spleen diet, local roentgen or radium irradiation).

RIO DE JANEIRO

(From Our Regular Correspondent)

May 15, 1932.

A New Species of Blastomyces

Before the Sociedade de Medicina of Pernambuco, Dr. J. Lobo recently delivered an address on blastomycosis in which he reported on a patient of Recife, aged 48, who presented a dermatosis of nineteen years' duration. The lesions consisted of a large number of either isolated or confluent nodules, ranging in diameter from a pin's head to about 15 mm., at the sacral region. The nodules, which were resistant to pressure, hard on palpation and of a chestnut color, had a white point at the top. Neither ganglionic nor perinodular inflammatory reactions were observed. The nodules oozed a thick pus, which microscopically showed a large number of round micro-organisms, regular in size and covered by a double membrane. The organisms wandered among the leukocytes. They were smaller than Coccidioides immitis, had granulations inside their bodies, and showed brownian movement. A part of the lesion was removed by biopsy and cultures were made with these tissues with Sabouraud's medium. The morphologic characteristics of the organism were identified by Goodpasture and MacCallum's staining methods, and the speaker concluded that the patient had blastomycosis caused by fungi other than those previously described as causal agents of the disease. He based his assertion on the following facts: The disease developed as a nodular dermatosis, starting at the sacral region, and followed a slow evolution during nineteen years without greatly affecting the patient's general condition. The culture tubes showed on the third day an ivory-white colony with concentric circles, and with a central elevation formed by aerobic hyphae. The microscopic characteristics of the organism were those of either septate or branched mycelia, with some resistant forms of chlamydospores. The subcutaneous and testicular inoculation made with the pus and the cultures of the infected material into the guinea-pigs gave negative results. A study of the lesions proved the presence of an inflammatory granuloma with primary cellular reaction, especially for the presence of hyaline tissues, with a large number of parasites wandering among the cells and inside the gigantocytes. A study of the parasites showed the presence of developing forms with chromatic granulations inside the parasitic structures. The author concluded that the organism identified is a new species of blastomyces. Large doses of potassium iodide did not produce satisfactory results.

Bacilli of the Proteus X Group

Dr. Arlindo de Assis, head of the Hospital São Sebastião, of Rio de Janeiro, has published an article on the power of fermentation of the bacilli of the proteus X group on several mediums. It has been stated that Proteus X Kingsbury is unable to produce acid in saccharose and maltose mediums and to produce indole in peptone-water, while Proteus X 19 and X 2 have a strictly opposite behavior. The author investigated the behavior of bacilli of the proteus X group, using a technic which when previously used, to investigate the behavior of Bacterium dysenteriae, had given results showing the slightest changes in the reaction. The author made tests with H colonies and O colonies of each strain of Proteus X Kingsbury, Proteus X 19 and Proteus X 2, while colonies were obtained from the Lister Institute. The fermentation tests were made by using Hiss-serum-water medium to which phenol red had previously been added as an indicator. In the tests, which lasted for seventy days, dextrose, lactose, maltose, saccharose, mannitol and dulcitol mediums were used, and the cultures were kept at a temperature of 75 C. (167 F.). Proteus X 19 and X 2 proved to produce both acid and gas in the dextrose medium and acid in the saccharose and maltose mediums, while mannitol, dulcitol and lactose mediums remained free from acid, although a definite alkaline reaction could be detected in the lactose medium when it was 10 or 12 days old. Bacilli proteus X 19 and X 2 rapidly fermented saccharose; the cultures became acid and clotted early in about twenty-four hours of incubation. On the contrary, the acid production on maltose under the effect of the bacilli was permanently poor and the medium remained fluid during the entire length of the experiment. The group of Proteus X Kingsbury did not have any effect on lactose, mannitol, dulcitol and maltose mediums. However, it caused rapid fermentation with production of gas on the dextrose medium and a marked acid reaction of slow development on the saccharose medium in about seven days, which was more noticeable during the following days and was not associated with the production of gas. The acid reaction occurred earlier with bacilli of the O Kingsbury type than with those of the H Kingsbury type. Subcultures derived from saccharose cultures after an incubation of seventy days proved to have a power of fermentation, especially for saccharose medium, causing the clotting of the saccharose medium after twenty-four hours of having been made, but they have no effect on the maltose medium. The subcultures derived from maltose cultures after an incubation of seventy days proved to have a power of fermentation on saccharose medium and not on maltose medium. Bacilli of the proteus group X 19 and X 2 have a strong power of fermentation on maltose medium. Bacilli of the Proteus Kingsbury strain may have the same power of fermentation that Proteus X 19 and X 2 have on saccharose but not on maltose. The indole production was definitely absent from the cultures made with Proteus X Kingsbury, while it was present in the cultures made with the other two strains of bacilli (Proteus X 19 and X 2).

Evidence of Filtrable Forms of Tubercle Bacilli

Drs. G. Pacheco and P. de Toledo Artigas of São Paulo recently delivered lectures before the Sociedade de Biologia of São Paulo on their experiments for the demonstration of filtrable forms of tubercle bacilli in filtrates of tubercle bacilli cultures, subjected to a special technic of bacterial concentration. The authors used in their work Zeitz sterilized plaques and Chamberland L_1, L_2, L_3 and L_5 porcelain filters. The cultures used in their experiments were of bovine tuberculosis (stock given by the firm of Vallée) and developed in Sauton's medium. As control bacilli, Brucella abortus and Pasteurella aviseptica were used. The glass apparatus used during the experiments were all new and subjected to the action of chromium sulphate. The stains used were previously controlled. The filtrates were planted in broth and they did not cause the development of cultures. The examination made in six filtrates in Zeitz plaques gave positive results in four cases, by proving the presence of acid-fast forms of bacilli in the filtrates. Positive results were also obtained when the filtrates were passed through the Chamberland filters L_1 and L_2.

NETHERLANDS

(From Our Regular Correspondent)

May 18, 1932.

Medicine as Promoter of Peace Between Nations

At the recent meeting of the Nederlandsche Laatschappij tot verordering der Geneeskunde, which comprises the majority of the physicians of the Netherlands, several speakers brought out in their addresses that the spirit of medicine tends by its very nature to promote peace between nations. Taking up this principle, Dr. Roorda pointed out the dangers and the atrocities to which not only the combatants but also the noncombatants were subject, and emphasized that physicians could suppress in a measure the war instinct. Burger brought out that it is not so much the dangers of war itself that depress the spirit of mankind as it is the disturbance of economic and psychologic relations as after-effects of a great war. The medical associations of small neutral countries contribute readily toward the confirmation of peace but it is much more difficult to secure the support of those that participated in the war. Posthuma thinks that, from the medical point of view, physicians can admit their inability to cope with certain dangers from war gases, not only from the preventive but also from the therapeutic point of view, and thus support a strong movement to do away with this means of aggression. An organization has been established bearing the name of Oorlogsprophylaxis, which has already manifested its activity by addressing a series of tracts in English, German, French, Dutch and Esperanto to all the medical associations of the world.

A Bill Pertaining to Radiologic Installations

Article 143 of the law pertaining to higher education stipulates that the doctor's diploma confers on the physician the right to practice medicine in all its branches. Article A of a pending bill pertaining to radiologic installations restricts the application of article 143, for it provides that henceforth only those who shall have received permission to install radiologic apparatus may practice this branch of medicine, and furthermore, a physician must furnish evidence of his competence. In case the university should desire to furnish a diploma as an indispensable condition for the securing of authorization, the question arises as to whether it would not be well to make reference to that fact in the law. A general authorization might be accorded to physicians and dentists, but then only for the examination of the jaws. As to the surgeon-dentists, who have had only an incomplete training in dental medicine and surgery, such competence is not granted to them. It would be well, therefore, to be circumspect in the consideration of this bill, which may involve the principles of medical education.

The Crusade Against Rheumatism

The conclusions of the commission appointed to deal with the crusade against rheumatism, which was under the chairmanship of Dr. P. Ruitinga, are as follows: Four per cent of the population is affected with rheumatism, 1.5 per cent of whom may be treated by physical therapy, whereas for the remaining 2.5 per cent (muscular rheumatism and lumbago) such treatment is useless. The institute of physical therapy at Amsterdam treats annually 2,500 patients suffering from rheumatism. The commission considers the erection of hospitals necessary if the departments of physical therapy in the existing hospitals are not well organized. In order that the crusade against rheumatism may be complete, it will be necessary to establish consultation centers where the cause in each case can be ascertained. From these centers, the patients could be sent to the clinics or to institutes. For the transportation of patients with grave rheumatism, a special automobile service should be organized. The problem of the expansion of physical therapy in the broad sense (that is, also for nonrheumatic disorders) is partly solved. But before taking any definite position it would be desirable to see in what direction the consultation centers should develop physical therapy in the more intensive crusade against rheumatism.

Discussion on Dental Caries

At the thirty-sixth Congress on the Organization of Public Health, the chief topic on the program was "The Surgicodental Treatment of the Various Classes of the Netherlands' Population," as presented by the dentists P. J. J. Coebergh of Utrecht, H. Van der Molen and Professor Heringa. Some points brought out were that there is general agreement on the value of careful hygiene of the mouth but that one should not exaggerate the need. There is not always agreement, because of the varying conceptions of the disorder, on how to prevent caries. According to some, particles of food adherent to the teeth ferment, dissolve the enamel and become the port of entry for bacteria that cause caries. According to other authorities, dietary errors in the young child, and resultant defects in the composition of the teeth, cause the teeth to be more easily subject to caries. The next question that arises is at what age dental prophylaxis should be instituted—in preschool children or in school children; with reference to the deciduous teeth or to the permanent teeth. The general opinion is that one should begin with the lower classes in school. Then, again, where should the policlinic be located? On this point opinions differ. Some think a center could be made to serve several schools. Who should examine the children? The examination of the teeth, the dentists think, should be entrusted to nurses who have taken a short course in dentistry. In addition to dental surgery in the school, the question of dental surgery for young persons who have left school was discussed, and also for older persons. The cost of dental care would be high, but not so high for those whose teeth had received preliminary care in the schools. Dental surgery should aim to become preventive.

Marriages

Edward Mitchell Vaughan, Middletown, Del., to Mrs. Eva Sykes of Millington, Md., at Wilmington, Del., June 4.

Hugh B. Brown, Abingdon, Va., to Miss Mary Evelyn Jones of Bristol, Tenn., February 23.

Egbert L. Mortimer to Miss Caroline Bushnell Lucius, both of Baltimore, June 18.

John Harlan Hornbaker, Baltimore, to Miss Elizabeth Gilbert Chaffinch, June 23.

Leslie S. Whitaker to Miss Georgia E. Taylor, both of San Jose, Calif., June 25.

Don Marshall, Amherst, Mass., to Dr. Evelyn M. Weeks of Baltimore, June 27.

Charles Solms, New York, to Miss Helen Rowe Purdum of Baltimore, June 30.

John Murray Steele to Miss Sylvia M. Ward, both of New York, July 1.

Alexander Wiener to Miss Gertrude Rodman, both of Brooklyn, June 30.

Conrad A. Mietus to Miss Helene M. Bartczak, both of Buffalo, June 30.

Deaths

George Arnold Moleen ⊕ Denver; Gross Medical College, Denver, 1900; Secretary of the Section on Nervous and Mental Diseases, 1912-1915, and Chairman, 1915-1916, American Medical Association, and member of the House of Delegates, 1917-1918; professor of neurology, University of Colorado School of Medicine; member of the American Neurological Association, American Psychiatric Association, and the Association for Research in Nervous and Mental Diseases; member and past president of the Central Neuropsychiatric Association, the Denver City and County Medical Society and the Denver Clinical and Pathological Society; on the staffs of the Colorado General, Denver General, Mercy and Children's hospitals, and the National Jewish Hospital for Consumptives, Denver; consultant in neurology, Swedish National Sanatorium for Tuberculosis, Englewood; editor of *Colorado Medicine*, 1906-1910; aged 55; died, June 22, of heart disease.

Joseph Leidy ⊕ Penllyn, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1887; assistant demonstrator of pathology, anatomy and morbid histology in 1892 and anatomy in 1893 at his alma mater; member of the American Association of Anatomists; delegate to the International Congress of Hygiene and Demography at Paris in 1900; during the World War he served with the rank of lieutenant colonel as medical director and instructor of gas defense for the thirtieth division of the U. S. Army; formerly physician to the University Hospital, Pennsylvania General Hospital and the Pennsylvania Hospital for Insane, Philadelphia, and the medical clinic of the Pennsylvania Hospital; surgeon to the Howard Hospital, the Hamilton and Philadelphia dispensaries; aged 66; died, July 6, of heart disease.

Emil G. Beck ⊕ Berkeley, Calif.; College of Physicians and Surgeons, Chicago, 1896; member of the Illinois State Medical Society, the Western Surgical Association, the American Association of Thoracic Surgery, the American Roentgen Ray Society, Radiological Society of North America and the American Radium Society; fellow of the American College of Surgeons; in 1923 received from the American Roentgen Ray Society a gold medal in recognition of original work in stereoroentgenography; brother of Drs. Carl and Joseph C. Beck; author of "Chronic Suppurations—Treatment by Bismuth Paste;" aged 66; formerly director of the North Chicago Hospital, Chicago, and on the staff of the Merritt Hospital, Oakland, Calif., where he died, July 1, of cerebral hemorrhage.

John Alling Card ⊕ Poughkeepsie, N. Y.; New York University Medical College, New York, 1898; member of the House of Delegates of the American Medical Association, 1929, 1930 and 1931; formerly councilor of the first district of the Medical Society of the State of New York; speaker of the house of delegates of the Medical Society of the State of New York; past president of the Dutchess-Putnam Counties Medical Society; for fifteen years coroner of Dutchess County; attending pediatrician to the Vassar Brothers Hospital; consultant pediatrician to St. Francis and the Bowne Memorial hospitals; chairman of the committee on publication of the *New York State Journal of Medicine;* aged 56; died, June 28, in the Sadlier Hospital, of nephritis and myocarditis.

John Wesley Andrews, Mankato, Minn.; Rush Medical College, Chicago, 1877; Bellevue Hospital Medical College, New York, 1880; an affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; past president of the Minnesota State Medical Association and the Blue Earth County Medical Society; at one time member of the state board of medical examiners; formerly state senator, member and president of the board of education, and mayor of Mankato; on the staffs of the Immanuel and St. Joseph's hospitals; aged 83; died, May 16, of senile aplastic anemia.

Jonathan Leaming Wiggins, San Diego, Calif.; St. Louis Medical College, 1877; member and past president of the Illinois State Medical Society and St. Clair County Medical Society; fellow of the American College of Surgeons; member of the Illinois Department of Registration and Education, 1919-1920; former member of the board of education of East St. Louis, Ill.; at one time on the staffs of the Deaconess Hospital and St. Mary's Hospital, East St. Louis; aged 77; died, May 28, of heart disease.

Earl Perkins Lothrop ⊕ Buffalo; Niagara University Medical Department, Buffalo, 1894; fellow of the American College of Surgeons; past president of the Buffalo Academy of Medicine and the Medical Society of the County of Erie, on the staffs of the Millard Fillmore Hospital, Buffalo, J. N. Adam Memorial Hospital, Perrysburg, N. Y., and the Columbus Hospital, New York; aged 61; died, June 9, of acute mastoiditis.

Walter Murray English, Brockville, Ont., Canada; Victoria University Medical Department, Coburg, 1886; at one time emeritus professor of sanitary science, University of Western Ontario Medical School, London; member and past president of the American Psychiatric Association; formerly medical superintendent of the Ontario Hospital; aged 70; died, May 19, in Oxford, England.

Thomas Jefferson Smith, Bridgeton, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1866; member, past president and vice president of the Medical Society of New Jersey; past president of the Cumberland County Medical Society; formerly medical director of the Cumberland County Hospital for the Insane; aged 91; died, June 14, of pneumonia.

Guy Glenn Giffen ⊕ Dayton, Ohio; Ohio-Miami Medical College of the University of Cincinnati, 1911; member of the American Urological Association; formerly secretary of the Montgomery County Medical Society; served during the World War; aged 43; on the staff of the Miami Valley Hospital, where he died, June 17, of metastatic lymphoblastoma.

Oren Judson Waters, Chicago; Jefferson Medical College, Philadelphia, 1891; member of the Illinois State Medical Society; fellow of the American College of Surgeons; assistant professor of (extramural) surgery, Northwestern University Medical School; on the staff of the Passavant Memorial Hospital; aged 74, died, June 25, in Milwaukee.

Edgar Martin Freese ⊕ Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1908; fellow of the American College of Surgeons; on the staffs of the Grant Hospital, St. Francis Hospital and the White Cross Hospital; aged 45; was accidentally shot and killed, June 13, at a ranch near Medora, N. D., while cleaning a revolver.

Starling Sullivant Wilcox, Columbus, Ohio; Starling Medical College, Columbus, 1888; member of the Ohio State Medical Association, and fellow of the American College of Surgeons; for ten years district head of the U. S. Veterans' Bureau in Columbus; surgeon to the Grant Hospital; aged 67; died, June 1, of cerebral hemorrhage.

John Joseph English, Troy, N. Y.; Medical Department of the University of the City of New York, 1893; served during the World War; chief medical inspector in the Troy Public Schools; for many years on the staffs of the Troy Hospital and St. Joseph's Maternity Hospital; aged 64; died, June 12, of heart disease.

Philip Kilroy ⊕ Springfield, Mass.; Harvard University Medical School, Boston, 1888; member of the Association for Research in Nervous and Mental Diseases; formerly on the staffs of the Springfield Hospital and the Mercy Hospital; aged 66; died, May 24, of coronary thrombosis and chronic myocarditis.

John Marcus Fox, Minneapolis; Minneapolis College of Physicians and Surgeons, 1901; member of the Minnesota State Medical Association; formerly member of the board of health and board of education of Osseo; aged 56; died, May 7, of cerebral hemorrhage and hypertension.

Thurman Alson Hull ⊕ Troy, N. Y.; Albany (N. Y.) Medical College, 1905; member of the American Roentgen Ray Society; for six years county coroner; formerly on the staff of the Samaritan Hospital; aged 52; died, June 20, in the Albany Hospital, of angina pectoris.

William Henry Rabberman ⊕ Forest, Ohio; Starling Medical College, Columbus, 1906; served during the World War; member of the board of education; on the staff of the McKitrick Hospital, Kenton; aged 57; died, June 4, at Dayton, of chronic myocarditis.

Addley Hogan Gladden, Monroe, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1888; formerly member of the state board of health; served during the World War; aged 66; died, June 8, of chronic nephritis.

Sterling Price Holland, Blakely, Ga.; Medical Department of the Tulane University of Louisiana, New Orleans, 1908; member of the Medical Association of Georgia; aged 51; died, May 29, in a hospital at Dothan, Ala., of angina pectoris.

Frederic John Haas ⊕ Leavenworth, Kan.; University Medical College of Kansas City, 1907; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 56; died, June 7, of cerebral embolism and bilateral phlebitis.

William Francis Meagher, Hartford, Conn.; University of Vermont College of Medicine, Burlington, 1899; member of the Connecticut State Medical Society; aged 65; died, June 9, of arteriosclerotic heart disease.

Samuel C. Waters ⊕ Middletown, Ind.; Starling Medical College, Columbus, Ohio, 1881; past president of the Henry County Medical Society; aged 71; was found dead in his office, June 22, of cerebral hemorrhage.

Frank Allen Hubbard ⊕ Taunton, Mass.; Medical Department of the University of the City of New York, 1878; on the staff of the Morton Hospital; aged 80; died, June 21, of arteriosclerosis and angina pectoris.

Thomas Tass Fyfe, Greenfield, Mass.; Homeopathic Hospital College, Cleveland, 1889; aged 72; on the staff of the Franklin County Public Hospital, where he died, June 1, of a staphylococcus infection.

Frederick Henry Eames, Watertown, Mass.; Medical School of Maine, Portland, 1892; aged 72; died, June 15, in the New England Deaconess Hospital, Boston, of cardiorenal disease and uremia.

Alfred J. Abbott, Albion, Mich.; Rush Medical College, Chicago, 1882; past president of the Calhoun County Medical Society; health officer of Albion; aged 70; died, June 21, of heart disease.

Wilfrid Aurelien Morais, Fall River, Mass.; Tufts College Medical School, Boston, 1927; member of the Massachusetts Medical Society; aged 31; died, May 15, of pulmonary tuberculosis.

Otho Marion Ford, Rockford, Ill.; Chicago College of Medicine and Surgery, 1908; member of the Illinois State Medical Society; aged 51; died, June 14, of an overdose of morphine.

Heinrich August Habenicht ⊕ Des Moines, Iowa; American Medical Missionary College, Chicago, 1899; on the staff of the Iowa Methodist Hospital; aged 60; died, June 6, of aortic stenosis.

Herman Samuel Schulz ⊕ Bridgeport, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1901; aged 52; died, June 7, of chronic myocarditis and acute dilatation of the heart.

Duncan Nevan Carmichael, Peterborough, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1884; L.R.C.P., Edinburgh, Scotland, 1884; aged 77; died, April 13.

Arthur W. Scott, San Francisco; University of California Medical Department, 1879; aged 75; died, April 15, in St. Francis Hospital, of cerebral hemorrhage and diabetes mellitus.

Thomas W. Hail, Denver; Gross Medical College, Denver, 1898; aged 68; died, May 25, in the Presbyterian Hospital, of malignant endocarditis and acute hemorrhagic nephritis.

Harry Kent Bell, Port Chester, N. Y.; Long Island College Hospital, Brooklyn, 1884; aged 75; died, June 12, in the United Hospital, of heart disease and nephritis.

Walter Edward Smith ⊕ San Francisco; Toledo (Ohio) Medical College, 1912; aged 49; died, April 24, in St. Joseph's Hospital, of pneumonia and duodenal ulcer.

Josephine Howland, Union Springs, N. Y.; Woman's Medical College of Pennsylvania, Philadelphia, 1895; aged 79; died, June 2 of cerebral hemorrhage.

Caesar S. Bassett, Hampton, Va.; Leonard Medical School, Raleigh, N. C., 1906; aged 54; died, May 24, of pulmonary embolism following an appendectomy.

William Jackson Smith, Sperryville, Va.; Jefferson Medical College of Philadelphia, 1886; aged 70; died, May 1, of chronic myocarditis and nephritis.

John Clifton Pearson, Phillipsport, N. Y.; University of Vermont College of Medicine, Burlington, 1885; aged 75; died, May 26, of chronic myocarditis.

Gustavus Adolphus Gissy, St. Louis; Beaumont Hospital Medical College, St. Louis, 1897; formerly a druggist; aged 65; died, June 3, of heart disease

George B. Klump ⊕ Williamsport, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1897; aged 58; died, May 26, of pneumonia.

George W. Lambley, Ainsworth, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1883; aged 71; died, May 16, of cerebral hemorrhage.

Jerry E. Brainard, Superior, Neb.; Homeopathic Hospital College, Cleveland, 1889; aged 67; died, May 15, of chronic interstitial nephritis.

Edwin Clarence Rogers ⊕ Wapello, Iowa; Keokuk (Ia.) Medical College, 1898; aged 59; died, May 30, of a self-inflicted bullet wound.

George Stromer, Broussard, La.; College of Physicians and Surgeons, Baltimore, 1891; aged 71; died, May 8, of pneumonia.

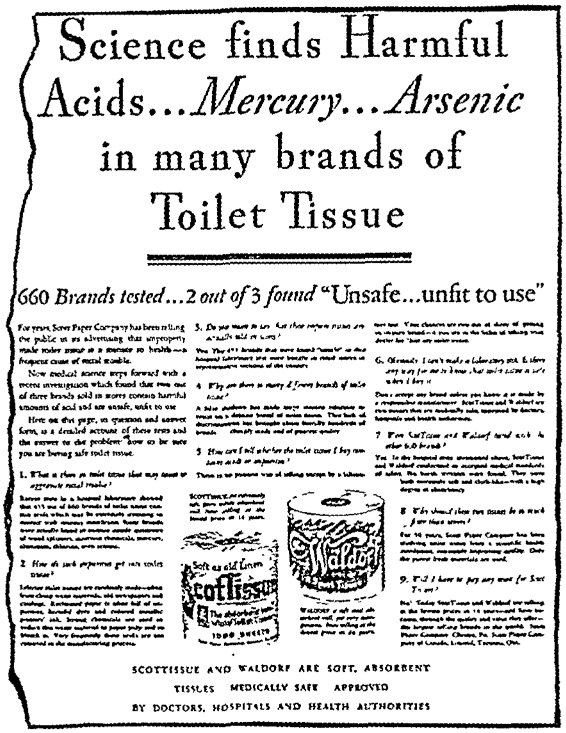
Edwin John Lauber, San Leandro, Calif.; Toledo Medical College, 1909; aged 47; died, June 2, of heart disease.

Bureau of Investigation

SCOT TISSUE

The Use of Pseudo-Science and the Fear Complex In Breaking Down Sales Resistance

There are fashions in advertising. In the mauve decade the mere mention of certain personal and intimate features of life was considered an offense against good taste—and, naturally, it had no sales appeal. Even the most brazen advertisers—the "patent medicine" exploiters—set certain empirical limits beyond which it appeared, if not indecent, at least commercially unwise to venture. Today, there is little that is too intimate or too delicate to be emblazoned on the advertising pages of the metropolitan dailies and the national weeklies or monthlies. The daring advertisements of yesterday—of boudoir unmentionables and what-not—have been replaced today by advertisements of bathroom accoutrements for masculine or feminine hygiene, sanitary pads which induce radiance on the part of the wearer, and toilet paper—all coupled with a health appeal!



Science finds Harmful Acids...*Mercury*...*Arsenic* in many brands of Toilet Tissue

660 Brands tested...2 out of 3 found "Unsafe...unfit to use"

SCOTTISSUE AND WALDORF ARE SOFT, ABSORBENT TISSUES MEDICALLY SAFE APPROVED BY DOCTORS, HOSPITALS AND HEALTH AUTHORITIES

Photographic facsimile of a full-page advertisement of Scott Tissue. The original was 11 inches by 14 inches in size.

In keeping with the tendencies of the times, the styles of advertising toilet paper have changed. At first the emphasis was on quantity and price or other features which might have practical bearing. Then came the vogue of pastel colors to match the walls or porcelain equipment of the bathroom. The aesthetic appeal naturally included emphasis on softness. These appeals, however, lacked the scientific or health element, the aspect that simply must be found to make the advertising of tissue paper abreast with the advertising of tooth pastes, mouth washes, and pseudo-scientific toilet prerequisites.

The urge to overdo is no better exemplified than in the recent exploitation of Scot Tissue toilet paper. In order that one may appreciate to what extent of refinement and nicety the promoters of this commodity have gone, let it be stated that Scot Tissue paper is now advertised as being "chemically pure"—though for what reason it should be so pure is not obvious. "Soft as old Linen" reads the label on one of these utilitarian rolls. It is further defined as being "The absorbent soft white toilet tissue . . . medically safe . . . approved by doctors, hospitals and health authorities." In recent months, the concern has reverted to "Science"—with a capital S—to aid it in its efforts to inform the public of the absolute safety of these absorbent rectal-health tissues. Nor is medicine the only branch of science that is butchered to make an advertising holiday. Chemistry, with its traditions of unraveling deeply-shrouded mysteries, is also dragged into the picture. The advertising agency of the Scott Paper Company, evidently realizing the possibilities of chemical examination, set forth to have "research" done in a "nationally-known laboratory."

The advertisements giving the results of this "investigation" may be counted on to arouse the necessary amount of fear on the part of the toilet-paper-using public—a no small audience, Chic Sale to the contrary notwithstanding. Blazing forth in type that could be read across the street is the warning:

> "Science finds Harmful Acids . . . Mercury . . . Arsenic in many brands of Toilet Tissue."
>
> "660 Brands tested . . . 2 out of 3 found 'Unsafe . . . unfit to use.' "

But the public need not fear if it will but use Scot Tissue or Waldorf, another Scott Paper Company product! And if this appeal is not enough to convince the public that there is a safe way out, there is a peroration:

> "Use only tissues you know meet the standards which physicians approve."

Now, the data for such startling declarations should be easily available—especially as it was declared that "medical science" was back of them. Yet, the organized medical profession was hopelessly in the dark in the matter. In view of this disconcerting fact, the A. M. A. Chemical Laboratory communicated with the Scott Paper Company and put to it a few simple but pertinent questions.

First, since the advertisements had claimed that "medical science recently proved in a hospital laboratory" that two-thirds of the toilet papers on the market were "unfit to use," the Scott Paper Company was asked in what hospital laboratory the work had been done.

Second, since medical literature threw no light on the subject, the company was asked whether a detailed report of the laboratory work was available.

Third, since the advertisements definitely declared that "unsafe quantities" of arsenic and mercury had been found in the condemned two-thirds of the market supply of toilet paper, the A. M. A. Laboratory asked how much arsenic and mercury had been found in the "bad" papers and how these amounts compared with the amounts found in the "good" papers.

Fourth, since the Scott Paper Company urged that the public should use only toilet paper that "conformed to accepted medical standards," it was asked what these standards are—as the medical profession seemed to know nothing about such standards.

The questions, it will be seen, were elemental and such that any reputable concern with nothing to hide or to quibble about should be willing and eager to answer. Yet, through the entire correspondence it has been difficult to obtain definite replies. At the outset, it was necessary to send the same letter twice, the second time by registered mail. About a month after the first letter was sent, the advertising manager of the Scott Paper Company stated:

> "We were very much surprised to receive your letter of March 23, advising us that your letter of February 29 had not yet been answered. In order that the scientific facts of the investigation made of 660 brands of toilet tissue might be accurately given you, we forwarded your letter to the medical college hospital conducting the examination.
>
> "We are forwarding your second letter to them because we know they plan giving you full information about this work, and their letters to you must have gone astray. Thank you for writing us again, and please accept our apologies for the apparent negligence in responding to your inquiry."

Following this, there came a letter from Dr. John A. Killian, Director of the Department of Biochemistry of the New York Post-Graduate Medical School and Hospital, under whose guidance the scientific work was presumed to have been made. As Doctor Killian did not answer the essential points raised in the Laboratory's first communication, this omission was brought to the attention of both the company and Doctor Killian.

Some time later, a representative of the J. Walter Thompson Advertising Agency—which prepared the advertising copy—called at the A. M. A. Chemical Laboratory to discuss a proposed Laboratory report on the advertising of Scot Tissue. During the conversation this representative stated that the Scott

Paper Company had done much to improve the industry as a whole, which was in a better condition now than it had been years ago. He admitted frankly that the advertising was exaggerated; and opined that if advertising was seventy per cent accurate, it was considered quite honest copy—otherwise, it would lack the necessary emotional appeal. When the representative was asked for evidence supporting the statement that the product was made according to the standards of the medical profession, he replied that they had no evidence that this product complies with the "standards of the medical profession." In the previous correspondence, it had been pointed out that the A. M. A. Chemical Laboratory was generally recognized as the standardizing agency for the medical profession; yet, the Laboratory had never suggested nor heard of a standard for toilet paper. The advertising representative was told that the information desired was relatively simple—namely, a quantitative statement of the content of arsenic, mercury, or other chemical compounds alleged to have been found in the toilet papers examined, both in the cheaper and in the equally expensive grades; also, an explanation of the method of determining how much mercury or arsenic compounds were harmful.

Following this visit, Doctor Killian forwarded to the A. M. A. Chemical Laboratory a summary of the analyses of toilet papers made for the Scott Paper Company. The report classified the papers on the basis of such things as ground wood fibers, but did not name the brands nor give the selling price of the papers examined. The report showed that more than fifty-five per cent of the 660 brands examined contained no more wood fibers than were found in Scot Tissue and Waldorf!

Brands were also examined macroscopically for bundles of splinters. In this test Waldorf showed about four bundles per sheet; Scot Tissue showed only about one bundle in fifteen sheets. But there were three brands which had fewer splinters than Scot Tissue and six brands which had no splinters whatever! There were a number of other things, such as ash, etc., which did not appear to be of much interest and for which data were lacking to determine the relative purity of the Scott Paper Company's product.

What the A. M. A. Chemical Laboratory was concerned with mainly was the amount of mercury and arsenic in Scot Tissue and an explanation of how the danger threshold had been arrived at. As nearly as could be determined from Doctor Killian's report, the arsenic determination is summed up in one paragraph:

> "Arsenic was determined by the electrolytic Gutzeit method as described by Osterberg. Arsenic was found in 1.8 per cent of the brands examined, varying from traces (less than 0.01 mg.) to 1 mg. per 100 gm."

As arsenic was found in only 1.8 per cent of the brands examined, this means that out of 660 brands fewer than 12 had *any* arsenic whatever in them. The Scott products contained no arsenic. Even with the maximum amount found—1 mg. to 100 gm.—it strains the imagination to believe that such infinitesimal quantities could be harmful. To help visualize the amount of arsenic found in even those papers which contained the maximum amount, it may be stated that in a toilet paper of the same weight as Scot Tissue, each single sheet would contain not to exceed 1/20,000 of a grain of arsenic! The statements regarding mercury were equally unsatisfactory. In fact, it was admitted that quantitative analyses for mercury were not made on all the brands examined.

Iron was reported found in the ash of 90 per cent of the brands examined, but the amounts found in the Scott products were not given in the report. As the advertising agency that writes the Scott copy has not yet recommended that company's product for the relief of secondary anemias, it may be presumed that the amount of iron in either Scot Tissue or Waldorf is negligible.

In the letters to Doctor Killian, it was pointed out that it was manifestly unfair to compare a high-priced toilet paper with a cheap one, unless the differences in prices were made part of the report. In the same letters Doctor Killian was asked in what concentrations he would consider arsenic or its compounds to be deleterious or harmful ingredients of toilet paper.

To the first question, Doctor Killian replied that he had no information relative to the price of the various brands, so that it may be presumed that the 660 brands examined were not purchased on the open market by the laboratory that made the examination. On the question concerning the concentrations of arsenic that he considered deleterious or harmful, Doctor Killian replied that from his knowledge of the literature neither he nor, he believed, any one else could answer the question—a conclusion in which The Journal concurs. Yet, on the basis of the work done by Doctor Killian, the Scott Paper Company have not hesitated to blazon from one end of the country to the other the implied claim that the American public is running risks of arsenic poisoning from the use of some brands of toilet paper!

It is doubtless true that there are cheap toilet papers on the market that should be avoided; it can also readily be admitted that Scot Tissue and Waldorf are high-grade products, but probably no better than many others in the same price field. These facts, however, are no mitigation of the offense of the Scott advertising; making every allowance for what has been euphemistically termed "permissible puffery" in advertising, the recent advertisements of Scot Tissue fall entirely outside the pale. These advertisements are of a type that is all too common today, in which certain facts of little or no importance have been twisted and magnified in order to develop a fear complex on the part of the public.

This fact in itself is sufficient justification for a protest on the part of the medical profession. But this is not all. The Scott concern has dragged in the good name of medicine in an attempt to make the public believe that "medical science" had investigated the toilet paper problem and had found certain samples to contain arsenic, mercury and other substances "in sufficient quantities to cause rectal illness." Neither independent research nor the Scott concern's own investigation have proved any such thing.

Correspondence

DETERMINATION OF NONPATERNITY BY BLOOD GROUPS

To the Editor:—In reply to an inquiry concerning the application of blood groups for the determination of nonpaternity (The Journal, May 21, p. 1832), you quote the von Dungern and Hirschfeld theory after Ottenberg and Beres, and state: "Although a number of workers have repeatedly confirmed the statements of Ottenberg and Beres, the subject is still one of controversy." As a matter of fact, there is no longer any controversy; and since there has been a good deal of misunderstanding on the question of the application of the Landsteiner blood groups in problems involving blood relationship, I am writing this letter to present the pertinent facts in an attempt to clarify the subject.

As you point out in your reply, von Dungern and Hirschfeld were the first to prove that the agglutinogens A and B cannot appear in the blood of a child unless present in the blood of one or both parents (in other words, the agglutinogens A and B are inherited as mendelian dominants). This observation was made in 1910 and was based on a study of a fairly large series of families. Even at that early date, von Dungern and Hirschfeld said: "The fact that the demonstrable substances A and B cannot appear in the children if absent in both parents is forensically available" (Blood Tests for Paternity, editorial, The Journal, Oct. 2, 1926, p. 1130). This discovery by von Dungern and Hirschfeld has been amply confirmed by many workers in studies involving tens of thousands of children. In studies on 131 families with 642 children, Vaisberg and I failed to find a single exception to the law just enumerated (*J. Immunol.* **20**:371 [May] 1931). In fact, there has never been any controversy about this law, the only controversy having concerned the theory which von Dungern and Hirschfeld proposed to explain their law, as will be pointed out later.

The significance of the law of von Dungern and Hirschfeld may be understood from the first six matings in the accompanying table. Thus, in mating 1, in which both parents belong to group O (i. e., neither parents possesses any agglutinogen), the children can belong only to group O, for they cannot have either of the agglutinogens A and B. In mating 2, in which one parent belongs to group O and the other to group A, the children can belong only to groups O and A; and so on for the other matings. How this can be applied in an actual paternity case may be illustrated in the following two hypothetical examples: A man charged with the paternity of a child denies ever having had intercourse with the plaintiff, so the blood groups of the man, woman and child are determined. The man is found to belong to group A, the woman to group A, and the child to group B. Since the mother does not possess the agglutinogen B but the child does, this agglutinogen must have come from the father, who could therefore belong only to group B or group AB. The blood groups in this case, therefore, have furnished absolute proof of the man's innocence. Let us suppose, however, that in another similar case the blood groups were as follows: man, group B; woman, group A; child, group AB. As may be seen from the table, such a combination of groups is entirely possible. This, however, is no proof that the man charged with paternity is the true father, for in cosmopolitan populations 15 per cent of all individuals belong to group B. The man in question is no more proved the father of the child than is any other man belonging to the same group. Blood groups, therefore, are of no value as an aid in proving paternity; they can be used in certain cases only to prove nonpaternity.

Heredity of the Landsteiner Blood Groups

	Groups of Parents	Groups of Children Possible	Groups of Children Not Possible
1......	O + O	O	A, B, AB
2......	O + A	O, A	B, AB
3......	O + B	O, B	A, AB
4......	A + A	O, A	B, AB
5......	A + B	O, A, B, AB	
6......	B + B	O, B	A, AB
7......	O + AB	A, B	O, AB
8......	A + AB	A, B, AB	O
9......	B + AB	A, B, AB	O
10......	AB + AB	A, B, AB	O

In 1925, Bernstein proved that the theory of heredity of blood groups as enunciated by von Dungern and Hirschfeld was inaccurate. He proved from statistical considerations that the factors A and B are not inherited independently of each other as supposed by von Dungern and Hirschfeld, but that their heredity depends on three allelomorphic genes, A, B and R (Bernstein, F.: *Ztschr. f. indukt. Abstammungs- u. Vererbungs.* **37**:237, 1925). This does not change in any way the law formulated by von Dungern and Hirschfeld that the agglutinogens A and B cannot appear in the blood of a child unless present in the blood of one or both parents. This law, as has already been pointed out, is amply supported by the work of numerous investigators. In addition to this law, however, according to the Bernstein theory, a group AB parent cannot give rise to a group O child, and a group O parent cannot give rise to a group AB child. This new law gives additional opportunities for the exclusion of paternity, as is shown in the last four matings of the table.

There has been some controversy whether or not this law was correct, because the literature before 1925 contained numerous exceptions to it. These exceptions have been shown to be due to illegitimacy or errors in technic, however (*J. Immunol.* **18**:201 [March] 1930). Since 1925, a large amount of work has been done to determine whether or not exceptions to the new law exist, particularly by Schiff, Thomsen, Snyder, Furuhata and Vuori, none of whom have found a single exception. My associates and I have also made a special study of families in which one or both parents belonged to group AB, and among 218 children found only one group O child, and in this case the possibility of illegitimacy could not be excluded. On the basis of these results, Schiff is applying the blood groups for the determination of nonpaternity in the German courts according to the Bernstein theory (Schiff, F.: Die Technik der Blutgruppenuntersuchung, Berlin, Julius Springer, 1929). And Hirschfeld himself has recently stated that the Bernstein theory more adequately explains the heredity of blood groups than his own theory (*Klin. Wchnschr.* **10**:1910, 1931). Alternative hypotheses, such as the Bauer theory of linkage, are open to the same objections as the original theory of von Dungern and Hirschfeld. In the light of two unexplained exceptions to Bernstein's second law recently found by Haselhorst and Kossovitch, however, it may perhaps be better, for the time being, to use such exceptions only as strong circumstantial evidence of nonpaternity. The exclusions shown in the first six matings, however, may be safely considered absolute evidence of nonpaternity.

So reliable is the determination of nonpaternity by blood groups that in 1929 Schiff succeeded in collecting 5,584 cases in which blood groups had been applied for this purpose in Germany, Austria, Denmark, Sweden and Switzerland (Schiff, F.: *Med. Welt,* 1929, No. 31). At present the Landsteiner blood groups are also being applied in France, Italy and England.

In any case in which the results with the Landsteiner blood groups are inconclusive, tests for the agglutinogens M and N of Landsteiner and Levine should be performed (Landsteiner, K., and Levine, P.: *J. Exper. Med.* **47**:757 [May], **48**:731 [Nov.] 1928. Wiener, A. S.: Blood Tests for Paternity, The Journal, Aug. 30, 1929, p. 681; *Am. J. M. Sc.* **181**:605 [May] 1931). The original work of Landsteiner and Levine has been amply confirmed by Schiff, by Thomsen and Clausen, and by me, so that the medicolegal application of these agglutinogens is fully justified at present. In fact, Schiff is applying the agglutinogens M and N in Germany (Schiff, F.: *Deutsche Ztschr. f. d. ges. gerichtl. Med.* **18**:41, 1931).

As I have already pointed out, blood groups are of no value for proving paternity; they can be used only to prove nonpaternity. But not in every case in which a man charged with paternity is not the true father can blood groups prove his innocence. For example, if the putative father and the true father belong to the same group, no exclusion will be possible. It has been calculated that a man falsely charged with paternity can be exonerated in approximately one sixth of the cases by means of the Landsteiner blood groups (Determination of Nonpaternity, editorial, The Journal, Aug. 24, 1929, p. 612). If the blood is examined also for the agglutinogens M and N, the chances of proving nonpaternity are increased to one in three. Another application of the heredity of these agglutinogens is in cases in which new-born infants have been accidentally interchanged in hospitals. More than two thirds of such cases can be solved by the combined use of the agglutinogens A, B, M and N.

Alexander S. Wiener, M.D., Brooklyn.

SURGICAL TREATMENT OF LUNG ABSCESS

To the Editor:—In the report of the paper which I read in Madrid (The Journal, June 18, p. 2226), there is just one error which should be corrected.

Your reviewer states that I have advised that the first opening of a lung abscess should be in its inferior border, and since this is the very thing which I have stated should not be done, it seems to me that a word of correction might be advisable. All the more so because of the extremely careful abstracting of the remainder of the article. Pulmonary abscesses should be rarely, if ever, primarily drained through their lower border for fear of contaminating uninfected pleura. Full gravitational drainage, if necessary, should be reserved for a later operation.

Howard Lilienthal, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

RENEWAL OF BODY CELLS

To the Editor:—Do physiologists hold that the entire human body is continuing to renew itself? Lately I read somewhere that a complete renewal occurs every eleven months. But what I want specifically to know is whether every cell in the body dies and is replaced by a new one, once in so often, or whether there are cells that never die as individuals. According to one authority, Conklin, the germ plasm is immortal. That is, it not only persists throughout the life of the individual but is transmitted from generation to generation. Does this mean that its constituent cells are individually immortal? Then, as to the brain cells, if they actually die and are replaced time and again during a person's life, how do they transmit memory impressions to their successors? Perhaps you can recommend some book that will elucidate as well as explain this knotty problem.

C. Norman Howard, M.D., Warsaw, Ind.

Answer.—The cells in the blood, particularly the red cells or corpuscles, are continually being destroyed in the liver and spleen and other places and continually being produced in the marrow of the bone. The surface cells of the skin in man and other mammals are continually dying and shedding and they are being continually replaced through cell division in the deeper skin layers. In the case of blood corpuscles and skin, therefore, there is a continuous destruction and a continuous replacement of tissues. On the other end of the line are the nerve cells and skeletal muscles, of which there is no destruction or replacement normally but actual incapacity of reformation when destruction has been produced or loss of nerve cells or muscle fibers is suffered from any cause whatever. In most of the other tissues of the body, such as the smooth muscle cells, the liver cells, the gland cells or the connective tissue cells, there is little evidence of continued destruction and replacement of cells as a normal process, but there is good evidence on the question of capacity and regeneration or production of new cells by cell division when part of the tissues have been lost or destroyed. This applies also to bone and cartilage. In the case of the germ cells there is, indeed, continued production and continued destruction or loss of ova and sperm. In this respect the ovaries and testes, in more or less continuous production of sperm and ova, behave like the red bone marrow in the life history of the blood corpuscles. It would perhaps be more correct to say that the body is transmitted through the germ cells, from generation to generation, rather than the usual way of putting it that the "germ cells are immortal." The foregoing facts may be studied in any reliable book on physiology or anatomy and histology.

HYDROCEPHALUS AND TAY-SACHS DISEASE

To the Editor:—A young couple had a baby boy, a first child, which developed quite normally until about 7 months of age, when it began to lose weight, became listless and nonresponsive, developed pneumonia and died. During this period, the size of the head had increased. A well known Brooklyn pediatrician made a diagnosis of Tay-Sachs disease (amaurotic family idiocy), yet Bernard Sachs of New York stated emphatically that there was no cherry red spot in the macular area and that without this a definite diagnosis could not be made. Other well known neurologists declared that the baby was suffering from external hydrocephalus. However, neither diagnosis could be confirmed because autopsy was refused. Regardless, now, of the diagnosis, the couple wanted the following questions answered: 1. Have both hydrocephalus and Tay-Sachs disease occurred in any case reported? 2. What are the chances of hydrocephalus appearing in subsequent children? (Syphilis has been excluded.) 3 Although Boyd ("Pathology of Internal Medicine") states that following one case of Tay-Sachs disease subsequent children seldom escape, Bernard Sachs ("Osler's Modern Medicine") states that he has seen "normal children grow up side by side with the victims of the disease." What do you think of the possibility of having normal children after there has been one case of Tay-Sachs disease? 4. In the case cited by the young couple, are you inclined to agree with me that the case was not Tay-Sachs disease because: (*a*) No cherry-red spot was seen. (*b*) The head became larger. (*c*) The baby was the first born? 5. What factors would the young couple have to consider, what obstacles to avoid and what care to take to prevent either Tay-Sachs disease or hydrocephalus? Please omit name.

M.D., New York.

Answer.—1. A careful review of many reported cases fails to reveal the association of hydrocephalus with Tay-Sachs disease.

2. Since hydrocephalus depends for the most part on some congenital malformation or a prenatal inflammation, the chances for congenital transmission present a remote possibility, and as a matter of experience the occurrence is unlikely.

3. This question does not admit of a categorical reply. Experience has shown that when one child in the family has suffered from amaurotic family idiocy, a subsequent child may suffer similarly, though it is equally true that in certain families there have been a number of perfectly normal children and one or more suffering from amaurotic family idiocy.

4. A diagnosis of Tay-Sachs disease cannot be definitely made unless the cherry-red spot is present, with optic atrophy and progressive blindness associated with increasing mental deterioration and physical emaciation.

5. It is difficult to answer this question. Many mothers have borne a congenitally defective child and have been subsequently blessed with normal children.

JELLYFISH AND STINGING NETTLES

To the Editor:—Referring to the Query and Minor Note entitled "Bite of 'Jellyfish' or 'Stinging Nettle,'" which appeared in The Journal, April 9, I am writing to inform you that your information about jellyfish is wrong.

Webster's dictionary describes Portuguese man-of-war under "Physalia." That is one animal. The jellyfish is another animal which is entirely different.

The Portuguese man-of-war can be seen from a distance. It is like a floating bladder. If one is picked out of the water, tentacles of various kinds can be seen hanging down. The jellyfish, on the other hand, is indivisible and does not float above the surface. I have swum among jellyfish and could feel them but not see them.

Jellyfish seem to run in large numbers. The sizes vary. Sometimes they are small, weighing about 1 to 4 ounces and as transparent as if made of glass. The top seems to be like skin to the feel, while the bottom feels as if it really were some substance like jelly.

Some jellyfish run large and a beautiful ruby color. They look very much like placentas minus the cord, of course.

I have seen children playing with jellyfish but have never known of them to be "stung"; on the other hand, I have read of people being "stung" with jellyfish, and I would not be a bit surprised if the so-called stings were really sunburn. It is possible that persons who don't know enough not to get all burned red while bathing might think their trouble came from the jellyfish.

The Portuguese man-of-war seems to be scarce and I doubt whether it ever bothers bathers. The bladder appears to be from 6 to 8 inches long, and a person swimming could easily see and keep away from it. It is reasonable, too, that the Portuguese man-of-war, being slow and unable to leave the surface of the water, should carry some defense, while the jellyfish is defended by his low visibility, and he does not need a sting. Please omit name and city.

M.D., New York.

Answer.—This question was referred to the Bureau of Fisheries, which replies:

"You state that the Portuguese man-of-war is closely related to the sergeant fishes. We presume that the statement is meant to convey the idea that there is a small fish whose habit is to remain close to the tentacles of Physalia and so protect itself from its enemies. The Portuguese man-of-war is a siphonophore which normally inhabits the tropical waters but which is not uncommon in the summer as far north on the Atlantic Coast as Woods Hole, Mass. Colloquially speaking, it is a jellyfish, a term applied to many of the soft bodied pelagic forms found in the ocean. Usually, however, jellyfish is the term applied to the disk or inverted saucer shaped medusae, the common inshore form of which is Aurelia. This form looks like a large opalescent button floating around the docks and shallow waters and is probably quite harmless. The offshore form, which reaches a much larger size and which is reddish, bearing long curtain-like tentacles, is Cyanea and is encountered in deep water in abundance. Contrary to the belief of your correspondent, Cyanea is a very annoying animal to handle and is always carefully avoided by fishermen when they encounter it. I have first hand knowledge of the injuries which Cyanea can inflict.

"The small jellyfish which your correspondent describes as occurring in great numbers seems to be a ctenophore, or comb jelly, as it is usually called. The common animals of this group are Mnemiopsis, or Beroe. These animals look like large gooseberries when seen floating in the water, and I am sure that it is they to which your correspondent refers when he describes his being able to feel but not see them, as they are almost transparent. He has, however, not mentioned the Medusa, which is known in Chesapeake Bay as the sea nettle and which is known to science as Dactylometra quinquecirrha. This whitish animal has long tentacles heavily armed with nematocysts, and, when struck by the body of a swimmer, it is capable of administering a shock not unlike that received from an induction coil. The mark left on the skin after such an encounter will often last for several weeks.

"Of all the forms mentioned only the last, together with Cyanea and Physalia, are dangerous, and of these three the latter is the greatest offender."

USE OF ALUMINUM CHLORIDE FOR HYPERHIDROSIS

To the Editor:—In prescribing aluminum chloride 25 per cent for hyperhidrosis can I add any other drug to increase its efficiency? Please give a good vehicle for prescribing the aluminum chloride 25 per cent in liquid and ointment or paste forms. Also please give a good perfume or volatile oil with the amounts which may be added to make the prescription pleasing for one when applying the treatment.

J. Preston Davis, M.D., Waterproof, Ind.

Answer.—It is doubtful whether the efficiency of aluminum chloride solution could be enhanced by the addition of any other drug, excepting possibly alcohol, which is also astringent as well as antiseptic. Hence the best vehicle for prescribing is diluted alcohol. The following prescription might give a sufficiently satisfactory and pleasing result:

℞	Oil of rose geranium	0.05 cc.
	Oil of lavender	0.05 cc.
	Oil of cloves	0.05 cc.
	Ethyl acetate	0.10 cc.
	Aluminum chloride	50.00 Gm.
	Alcohol	100.00 cc.
	Water, to make	200.00 cc.

M. Label: Apply locally. For external use only.

DELAYED PUBERTY IN GLANDULAR DYSTROPHY

To the Editor:—A boy, aged 14 years and 8 months, 6 feet (183 cm.) in height and weighing 214 pounds (97 Kg.), with small, rather undeveloped, testicles and a small penis, is not as amorously inclined as is usually the case in boys of his age. Please offer suggestions as to treatment for the testicular and penile condition and also as to weight reduction. Otherwise the boy seems to be normal. Please omit name.

M.D., North Carolina.

Answer.—The age at which a boy attains puberty varies within wide limits, and the fact that the boy mentioned is not "as amorous" as boys in general has really little significance and may well be due to the way he has been brought up.

However, the picture seems to indicate a subthyroid condition in which there is present the usual combination of obesity and underdeveloped genital organs. A metabolism test might aid in the diagnosis.

The patient should be given thyroid extract, about 0.013 Gm. (one-fifth grain) twice a day, as well as tablets of the anterior lobe of pituitary extract, starting with 0.3 Gm. (5 grains) twice a day and increasing until he takes 0.3 Gm. four times a day.

It is important that the boy lead an outdoor life, with plenty of exercise and a diet rich in proteins but deficient in fats and carbohydrates. The diet should vary and be altered from time to time, depending on his general condition and weight.

VITILIGO

To the Editor:—A girl, aged 13, began to menstruate at the age of 10. Menstruation was irregular for the better part of three years but is now regular every month. She is well developed, weighs 131 pounds (59 Kg.) and is 62 inches (157.5 cm.) in height. She first noticed a leukodermal spot on one of her fingers twelve months ago. This has extended to the dorsal surface of all the fingers on both hands. About one month ago her right upper eyelid lashes began to turn white. Do you think this is a beginning vitiligo? Has any real treatment been recommended? Please omit name.

M.D., Georgia.

Answer.—There is little doubt that the case is one of vitiligo. The treatment is disappointing. As long as the disease is spreading, the only treatment likely to give results is that advocated by H. C. L. Lindsay (Treatment of Leukoderma with Gold Sodium Thiosulphate, *Arch Dermat. & Syph.* **20**:22 [July] 1929). This has its dangers and often fails. Long continued, repeated reactions produced by ultraviolet rays clear up the spots in some cases but it is a slow process. A paint composed of liniment of soft soap, alcohol and burnt umber can be applied to protect the surrounding pigmented skin from further browning during this treatment.

INDUCTION OF LABOR

To the Editor:—What are the most common methods used for the induction of labor? Is castor oil and solution of pituitary a fairly safe combination to use for induction of labor? Kindly omit name.

M.D., South Dakota.

Answer.—Castor oil and quinine were introduced by Gill Wylie early in the seventies for the induction of labor, and the method has been proved to be reasonably safe. Large doses of quinine are believed by some to kill the baby and there are some cases on record in which the uterus ruptured as the result of too strong pains induced by this drug. From 0.2 to 0.3 Gm. (3 to 5 grains), repeated not more than once, should be the limit. Solution of pituitary was later added to the combination and, if given in fractional doses and carefully watched, it may safely be used to supplement the action of quinine and castor oil. Three hours after the last dose of quinine, fractional doses of pituitary are administered hypodermically, beginning with one-half Voegtlin unit (there are 10 units in each ampule), repeating this every twenty to thirty minutes and, after one hour, doubling the dose. Not more than 10 units should be given in one day. Larger doses of pituitary are risky. Some physicians apply the drug intranasally, removing the pack at the first evidence of tumultuous uterine action.

PERSISTENT GONOCOCCIC INFECTION

To the Editor:—I have a patient, aged 37, with a chronic gonococcic infection of the prostate gland who has had all kinds of treatment, including irrigation, vaccines, massage, sound and diathermy, and yet remains positive for gonococci. Is there any other kind of treatment one may use that would be beneficial? Please omit name.

M.D., Indiana.

Answer.—Since the doctor has evidently exhausted all the common methods employed in his effort to eradicate the gonococcus from his patient, he might try experimentally the Gonococcal Bouillon Filtrate, obtainable from the Experimental Department of Parke, Davis & Co., with directions how to use it.

Prostatic massage is still indicated at about five day intervals. Of course, it is understood that this patient still has gram-negative diplococci as demonstrated by proper technic, otherwise the filtrate will be of no value.

DERMATITIS FROM METAL POLISH

To the Editor:—A patient consulted me suffering from a dermatitis of the hands and forearms and such constitutional symptoms as headache, malaise and nausea, without any fever. He had been working with a metal polish and attributed his symptoms to the polish. The polish has the following formula, which was obtained from the manufacturer:

Water	643½	pounds
Oxalic acid	1½	pounds
Alcohol	4	pounds
Foam silica	200	pounds
FFxx silica	200	pounds
VMP (benzine)	14	pounds
Ammonia	32	pounds
Oleic acid	74	pounds
Sassafras	2	pounds
Lemonone (artificial citronella)	6	pounds

Please tell me whether there is any ingredient that might be responsible for this patient's difficulty. Please omit name.

M.D., New York.

Answer.—Metal polishes long have been recognized as sources of dermatoses. Several of the constituents listed in the formula are known skin irritants. This may be due to chemical action (such as that from oxalic acid) or from mechanical action (such as that from silica). Rather than regarding a single constituent as the probable offender, it is more reasonable to assume that mixed irritation may have taken place.

Evaporation of the water content from rags used in polishing tends to leave in concentrated form such ingredients as the oxalic acid. Frequently a precise diagnosis may be made by cutting off a small portion of the rags used in polishing and affixing to the skin as a patch test, as discussed in The Journal, April 16, page 1367.

From the formula cited, it is unlikely that constitutional symptoms will directly arise. If such constitutional manifestations are associated with the metal polish, they are probably consequent to the dermatitis.

FRÖHLICH SYNDROME

To the Editor:—Given a case of a boy, aged 12 years, 60¼ inches (183 cm.) tall and weighing 150 pounds (68 Kg.), with the genitals markedly underdeveloped, what would you consider the best method of treatment? Glandular therapy has produced no change in about six months. Pituitary and thyroid have been used over that period, as well as limitation of starches and sugar and increased exercise.

Daniel B. Lynch, M.D., Albany, N. Y.

Answer.—Patients of the type referred to are difficult to appraise accurately and are equally difficult to treat. All will agree that this Fröhlich type is due to a disturbance in hypophyseal function. The nature of the degenerative changes occurring in this gland is not easy to determine. The gland substance may deteriorate on account of pressure from a hydrocephalus or from a tumor in the gland substance.

In any case, a careful neurologic and ophthalmologic examination should be made and repeated sugar tolerance tests should be taken to determine, if possible, whether the condition is due to an organic lesion or whether there is dysfunction of the gland, especially in relation to sugar tolerance. If the condition is due to simple hypoplasia as opposed to some destructive lesion caused by tumor or pressure from without, one might expect some improvement by administering whole pituitary gland substance; from 0.6 to 1.16 Gm. (9 to 18 grains) of this preparation has been given daily.

Enlightening information on the nature and treatment of these disorders may be found in the monograph of Dr. Harvey Cushing on "The Pituitary Body and Its Disorders" (Philadelphia, J. B. Lippincott Company, p. 175, case 34, and pages 257 to 259 on adiposity).

JUGULAR FORAMEN SYNDROME

To the Editor:—Will you be good enough to define the jugular foramen syndrome and its significance.

E. R. Ferguson, M.D., Cleveland, Tenn.

Answer.—The jugular foramen syndrome is applied to certain symptoms arising from injury to the ninth, tenth and eleventh cranial nerves, which pass out through the jugular foramen. Injuries such as fracture of the skull and wounds of various kinds in the region of the foramen may produce the symptoms. A knowledge of the function of the glossopharyngeus, the vagus and the spinal accessory nerves, and the signs and symptoms appearing as a result of lesions in or about the jugular foramen, will explain the signs and symptoms that usually appear, such as paralysis of the superior constrictor muscle of the pharynx on the same side producing some difficulty in swallowing, paralysis of the soft palate, loss of sense of taste in the posterior third of the tongue, paralysis of the tongue, and anesthesia of the larynx together with paralysis of the sternocleidomastoid muscle.

DISGUISING TASTE OF COCAINE

To the Editor:—Is there any way of camouflaging the taste of cocaine in order to make topical applications of the solution less distasteful when applied to the pharynx? Please omit name.

M.D., Wisconsin.

Answer.—It is difficult to camouflage or cover the bitter taste of cocaine. The alkaloid itself (not the chloride or other salts) can be dissolved in oil, to which oil of rose may be added, and it is thus possible to disguise the taste somewhat.

HUMIDITY IN THE SOUTHWEST

To the Editor:—I called the attention of the United States Weather Bureau here in Phoenix to the items appearing in Queries and Minor Notes, January 9 and April 2. The one on the latter date refuted the accuracy of relative humidity readings as taken in Phoenix and Tucson. It was written by the manager of the Tucson Sunshine Club. Mr. R. Q. Grant, meteorologist of the Weather Bureau in Phoenix, Arizona, writes:

"Please be advised relative to relative humidity of Tucson as compared with that of Phoenix that the advertisement of such data has been continued for a long time and has given the wrong impression to the public, particularly the suggestion that relative humidities were caused to appear considerably lower at Tucson than at Phoenix because made two hours later in the morning and one hour earlier in the evening.

"During the years 1930 and 1931, relative humidity readings have been made at noon at both places, thus affording a proper basis of comparison. At Phoenix, average noon readings for the year 1930 were 26 per cent; at Tucson, 31 per cent. At Phoenix for the year 1931, average noon readings were 28 per cent; at Tucson for the year, 34 per cent.

"An indication of greater relative humidity at Tucson than at Phoenix appears in the number of days with rain: At Phoenix in 1930 there were 43 days in which rainfall equaled one one-hundredth inch; at Tucson, 47 days. In 1931 at Phoenix there were 38 days with one one-hundredth inch or more rainfall; at Tucson, 72 days. In connection with this phase of the subject, Tucson has 50 per cent more rainfall than Phoenix.

"In the year 1930, Phoenix had 8.04 inches of rainfall; Tucson, 12.27 inches. In 1931, Phoenix had 10.32 inches of rainfall; Tucson, 16.26 inches. Let us cite an example to show what rainfall does to relative humidity: Seattle, Washington, with an annual rainfall of 34 inches, has an average relative humidity of 77 per cent; Spokane, in the same state, with an annual rainfall of nearly 17 inches, has a relative humidity of 63.5 per cent.

"As to one-half million acres undergoing irrigation in this valley it is well to remember that but a small area comparatively is under water at the same time, vegetation will stand only a limited amount of water, and our reservoirs, filled as they are, could not endure constant demand, as one might infer from the enclosed clipping. Besides, and finally, experiment has shown time and again that an area entirely covered with water will give off to the atmosphere less moisture than an equal area covered with prairie grass, the latter possessing numberless mouths through which moisture is transpired. So let us forget about irrigation and remember the rainfall.

"Since June, 1916, the equipment for obtaining relative humidity at Phoenix has been on the lawn of the Postoffice Building and has never been on a building exceeding three stories."

Leslie R. Kober, M.D., Phoenix, Ariz.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

Connecticut: *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

Illinois January Report

Mr. Paul B. Johnson, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, Jan. 12-14, 1932. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-one candidates were examined, 32 of whom passed and 9 failed. Sixteen physicians were licensed by reciprocity with other states and 2 physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine		(1930) 83, (1931)	81
Northwestern University Medical School		(1931) 80, 82, 85,	85, (1932) 81
Rush Medical College		(1930) 77, (1931) 78, 83, 84, 85, 85, 86,	88
University of Illinois College of Medicine		(1931)	84, (1932) 79, 81, 83, 84, 84, 86, 87, *
Tufts College Medical School		(1928) 83, (1929)	79
University of Minnesota Medical School		(1931) 76,	84
University of Pennsylvania School of Medicine		(1929)	84
Dalhousie University Faculty of Medicine		(1929)	83
McGill University Faculty of Medicine		(1922)	77
University of Bordeaux Faculty of Med. and Pharm.		(1914)	75

College	FAILED	Year Grad.	Per Cent
Chicago Medical School		(1931) 72, 80,† (1932)	65
Rush Medical College		(1931) 67, 77,†	79 †
McGill University Faculty of Medicine		(1926)	62
University of Naples Faculty of Medicine and Surgery		(1925)	71,‡ (1930) 65 ‡

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine		(1930)	Georgia
Northwestern University Medical School		(1927)	Missouri
Rush Medical College		(1930)	Michigan
State University of Iowa College of Med.		(1916), (1928, 2)	Iowa
Harvard University Medical School		(1929)	Penna.
St. Louis University School of Medicine		(1929)	Missouri
Washington University School of Medicine		(1927), (1930)	Missouri
Jefferson Medical College of Philadelphia		(1920)§	Iowa
University of Pittsburgh School of Medicine		(1924)§	Penna.
Meharry Medical College		(1927)	Missouri
University of Sidney Medical School		(1922)	Minnesota
University of Berlin Faculty of Medicine		(1929)	Michigan
University of Freiburg Faculty of Medicine		(1926)	Ohio

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College		(1926), (1927)	N. B. M. Ex.

* No grade given.
† Failed in clinical work.
‡ Verification of graduation in process.
§ License withheld pending payment of fee.

Nevada May Report

Dr. Edward E. Hamer, secretary, Nevada State Board of Medical Examiners, reports the written examination held in Carson City, May 2-4, 1932. The examination covered 11 subjects and included 79 questions. An average of 75 per cent was required to pass. Four candidates were examined, 3 of whom passed and 1 failed. Three physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1932)	84.6*
Cornell University Medical College		(1931)	87.3
Queen's University Faculty of Medicine, Ireland		(1920)	83

College	FAILED	Year Grad.	Per Cent
Maryland Medical College		(1906)	59.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1930)	California
Baltimore Medical College		(1913)	New York
Washington University School of Medicine		(1927)	Missouri

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of an internship. License will be issued when diploma is granted.

Kentucky Reciprocity Report

Dr. A. T. McCormack, secretary, Kentucky State Board of Health, reports 10 physicians licensed by reciprocity with other states from Jan. 13 to June 24, 1932. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Rush Medical College	(1926) Ohio, (1929)	Illinois
Tulane University of Louisiana School of Medicine	(1925)	Alabama
University of Michigan Medical School	(1929)	Michigan
Hahnemann Med. College and Hosp. of Philadelphia	(1929)	Penna.
University of Pennsylvania School of Medicine	(1929)	Penna.
Meharry Medical College	(1930), (1931)	Tennessee
Medical College of Virginia	(1923) West Virginia, (1926)	Maryland

Oregon Reciprocity Report

Dr. C. J. McCusker, secretary, Oregon Board of Medical Examiners, reports 4 physicians licensed by reciprocity with other states from March 24 to May 31, 1932. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Harvard University Medical School	(1923)	Mass.
University of Minnesota Medical School	(1925)	Minnesota
University of Oregon Medical School	(1928)	California
Medical College of the State of South Carolina	(1922)	S. Carolina

Book Notices

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1931 with Comments That Have Appeared in The Journal. Cloth. Price, $1. Pp. 100. Chicago: American Medical Association, 1932.

This book is a record of the consideration by the Council on Pharmacy and Chemistry of products found unacceptable for inclusion in New and Nonofficial Remedies. It is also the repository of valuable preliminary reports on the status and standardization of drugs that are not yet ready for general use by the medical profession and of timely special reports on the use or limitations of drugs that have already been recognized. The current volume of Council Reports is chiefly notable for reports of the last named category. In a report on the optimal dosage of cod liver oil, the Council puts on record the dosage arrived at as a result of a questionnaire sent to leading pediatricians; in another report on the intravenous use of barbital compounds is given the Council's considered verdict on the dangers of and the very limited indications for the use of the barbitals intravenously.

Among the reports on products found unacceptable are those on Thymophysin, a preparation of posterior pituitary and thymus, advocated as a safe and reliable means of accelerating delivery and marketed under false claims as to its essential action, as to its strength, and as to its safety for mother and child; on Bismuthoidal, claimed to be colloidal bismuth and marketed with unwarranted claims of value in the treatment of syphilis intravenously; on Frenly Enema Cream, a complex, unscientific mixture marketed under a therapeutically suggestive name, which is noninforming as to the composition, and with unwarranted claims of therapeutic value; on Olagen, a needlessly complex and unscientific mixture, of inadequate dosage, marketed under a nondescriptive name with unwarranted claims of therapeutic value in a host of conditions; on Hayner's Normaline, an unoriginal preparation of formaldehyde and zinc chloride marketed under a noninforming name, without a quantitative statement of composition on the label or in the advertising, and with unwarranted and misleading claims; on Pernocton, a barbituric acid product marketed under a therapeutically suggestive name and with unacceptable recommendations for intravenous use; on Solution Normet, an unscientific mixture of citrates marketed with unwarranted claims; and on Alqua Water, Calso Water and Alka Water, irrational proprietary "alkalizing" mixtures marketed with unwarranted and misleading claims.

The preliminary reports include those on Nucleotide K 96, a preparation of pentose nucleotides which has shown promise in the treatment of leukopenia; and on Carbarsone, which is *p*-carbamino-arsonic acid and which needs further confirmatory evidence for its value in the treatment of amebiasis, for which it is proposed.

Geburtshelfer und Röntgenbild: Erweiterung und Erneuerung der Geburtshilfe durch die Röntgendiagnostik. Von Universitätsprofessor Dr. Wilhelm Liepmann, Direktor des Deutschen Instituts für Frauenkunde und der Frauenklinik „Cecilienhaus," Berlin, und Dr. Gerhard Danelius, Assistenzarzt am Strahleninstitut des „Cecilienhaus." Paper. Price, 25 marks. Pp. 271, with 160 illustrations. Vienna: Urban & Schwarzenberg, 1932.

This unique monograph is dedicated by Liepmann and Danelius to Prof. Hugo Sellheim on the occasion of his sixtieth birthday. Besides being an atlas of obstetric radiography, it contains a series of fetal reconstructions in various presentations and positions, which have been artistically and accurately drawn from tracings from the films. A print of each original film used in illustration is shown and on the page opposite is the reconstruction, with full explanatory captions in German, English and French. The roentgenograms are reproduced with unusual clarity. While mention is made in the text of the diagnosis of early pregnancy by utilizing pneumoperitoneum and combined uterosalpingography and pneumoperitoneum, the authors evidently have had no personal experience with this valuable diagnostic technic and therefore have devoted their efforts mainly to a study of the later period of pregnancy. Frequent reference is made by the author to the epoch-making work of Warnekros in this field, and as is usual with German authors, few American references are cited, although a great many valuable contributions have been published in this country. Experiments were made by the authors on the relation of the position of the fetus to activity of the mother. For this purpose, pregnant women were whirled about on swivel chairs, films being taken before and after, with interesting and instructive results. Roentgen pelvimetry is described, and fetal monstrosities and multiple pregnancy are discussed; in the latter, however, only twins are illustrated. Finally, the third stage of labor is illustrated by roentgenography of the injected placenta, a contrast medium as first described by Weibel being used. The book will be acclaimed by teachers and students of obstetrics. It is printed on heavy glazed paper, well suited to roentgen illustration, in bold type, easily readable and free from errors. An adequate index is appended.

Pioneer Medicine in the Western Reserve. Compiled by Howard Dittrick, M.D. Boards. Pp. 110, with illustrations. Cleveland: Academy of Medicine of Cleveland, 1932.

This little book contains sketches and artistic portraits of fourteen physicians who have been influential factors in the medical life of Cleveland. Eight of these men have been deemed worthy of a place in Kelly and Burrage's Dictionary of American Medical Biography. The dedication is "To the Pioneer Mothers of the Western Reserve." The sketches are by various authors and appeared originally in the bulletin of the academy. In these sketches there is depicted the life and practice of medicine by pioneer physicians, the beginning of medical education and schools, the organization of medical societies, the founding of medical libraries, and the initiation of public health measures. In a general way the men of this group remind one of similar groups who stand out in the early days of many cities of the Middle West. Such a compilation as this impresses one with the debt we owe our pioneer ancestors in medicine who accomplished so much under adverse conditions. Future generations of Cleveland doctors will be grateful to those who prepared these sketches and compiled them in such an attractive manner.

Health and Its Maintenance: A Hygiene Text for Women. By Bertha Stuart Dyment, M.D., Medical Adviser of Women and Director of Physical Education for Women, Stanford University. With a chapter by Catharine Cox Miles, Ph.D., and one by Mrs. Eric Allen. Cloth. Price, $3.50. Pp. 472, with 62 illustrations. Stanford University: Stanford University Press; London: Oxford University Press, 1931.

Dr. Dyment has had a large experience in the teaching of hygiene to young women, in addition to an excellent scientific training. The present volume doubtless grows out of this classroom experience, a source which explains its practical character. In form it reverts to that of a number of the earlier works on personal hygiene, enough anatomy and physiology of the body and its parts to enable the student to read more understandingly the hygiene that follows. The latter follows custom in dealing with different systems, muscular, circulatory, and so on. In content the book is practical, concise and clear, and the information given is accurate and dependable.

There is an excellent chapter on individual mental hygiene from the point of view of the girl and the young woman which evidences practical knowledge of their problems and difficulties. As might be expected, the care of the skin receives considerable space and is well handled, but the reader is surprised that headaches are given only the briefest comment. The treatment of sex hygiene and reproduction is adapted to a work for women by the omission of material of particular interest to boys rather than the inclusion of an unusual amount of material for girls. The subject is handed sanely and well, however. On the whole, the book is a good one for the use of girls in high school or college; but why not have added a small amount of material in two or three chapters and omitted the qualifying phrase "A Hygiene Text for Women"? It would then be just as good a textbook for women and a perfectly good one for men. The printing is hygienic and the indexing unusually good.

Growth in Private School Children with Averages and Variabilities Based on 3,110 Measurings on Boys, and 1,473 on Girls, from the Ages of One to Nineteen Years. By Horace Gray, Stanford University Hospital, San Francisco, and J. G. Ayres, The Institute for Juvenile Research and Behavior, Research Fund, Chicago. Cloth. Price, $3.50. Pp. 282. Chicago: University of Chicago Press, 1931.

The object of the study reported in this book was to estimate the physical constitution of private school children, children whose parents were marked by professional or economic success. The general trend of growth is charted and expressed in formulas. There are also comparisons between these children and those reported by others. Differences in racial stocks are studied. Unfortunately, most readers of such a report will be lost in the maze of statistics. The value of the report might well have been enhanced by a general conclusion as to the results of the study.

Pathologische Physiologie der Wirbelsäule: Angeborene, konstitutionelle und funktionelle Veränderungen. Von Prof. Dr. Walther Müller, Oberarzt der Chirurgischen Klinik Königsberg i. Pr. Paper. Price, 35 marks. Pp. 319, with 274 illustrations. Leipzig: Johann Ambrosius Barth, 1932.

This book, on the pathologic physiology of the vertebra, was written by a man of excellent qualifications, as proved by his previous book on diseases of the bones. The book includes descriptions and illustrations of congenital, constitutional and functional disturbances of the vertebrae. A noteworthy feature is the emphasis placed on the embryologic aspects of each of the subjects discussed. There is an interesting roentgenogram of a case of arthritis deformans of the costotransverse joint. Of especial interest are chapters on embryology of the spine, homologues of the ribs, the different types of lumbar ribs, cuneiform or wedged-shaped vertebrae, congenital scoliosis, Klippel-Feil syndrome, disturbances of the nucleus pulposus, angioma of the thoracic vertebrae, chondrodystrophia foetalis, generalized thickening of the vertebral bodies, isolated thickening of individual vertebral bodies, malacia of the vertebrae including osteitis fibrosa and osteomalacia, acromegaly with thoracic kyphosis, dystrophia adiposogenitalis, hypertrophic arthritis, spondylolisthesis and posture. The illustrations, which include roentgenograms of living and of dead specimens, line drawings, diagrams and photographs, were well selected and reproduced. The publisher's work is excellent. The reproduction of the illustrations of the epiphyses of the vertebrae and pelvis is especially good.

Vegetable Fats and Oils: The Chemistry, Production and Utilization of Vegetable Fats and Oils for Edible, Medicinal and Technical Purposes. By George S. Jamieson, Ph.D., Chemist in Charge of Oil, Fat, and Wax Laboratory, Bureau of Chemistry and Soils, United States Department of Agriculture. American Chemical Society, Monograph Series. Cloth. Price, $6.50. Pp. 444. New York: Chemical Catalog Company, Inc., 1932.

This monograph brings within the compass of one volume the important information on source, extraction, manufacture, refining, hydrogenation, physical and chemical characteristics, composition, uses and general nutritive value of vegetable fats and oils. References for more detailed information are provided under the subjects treated. The fats and oils are arbitrarily divided into three classes, the nondrying, semidrying and drying, in accordance with the range of their iodine numbers. A chapter is devoted to fatty acids, alcohols, sterols, hydrocarbons and phosphatides, and another to recognized methods for the examination and analysis of fats and oils. The appendix includes tables of useful data, some characteristics of fats and oils, and their botanic and common names. The entire subject is treated in an unusually practical and simple manner. The treatise makes a vast amount of valuable information on fats and oils conveniently available, is fundamentally a descriptive reference work, and will be welcomed by all seeking information on this subject.

Das retikulo-endotheliale System der Schizophrenen: Experimentell-klinische Untersuchungen zum Schizophrenieproblem. Von Dr. Fr. Meyer, Oberarzt an der Landesheilanstalt Neuhaldensleben. Sonderausgabe von Heft 62 der „Abhandlungen aus der Neurologie, Psychiatrie, Psychologie und ihren Grenzgebieten." Paper. Price, 12 marks. Pp. 124, with 11 illustrations. Berlin: S. Karger, 1931.

The author begins with the assumption that schizophrenia is an organic disease and that some pathologic changes exist as a basis for it. In his research he utilized the functional tests of the *reticulo-endothelial* system, as he felt that the vascular system is the key to the understanding of schizophrenia. The author used the congo red method, which consisted in injections of a solution of congo red intravenously and the subsequent colorimetric estimation of the dye in the blood. The other method used is that known in the German literature as the Kauffmann method, which consists in the study of the exudate after application of the cantharides plaster to the skin (Kauffmann, F.: Die ortlich entzündliche Reaktionsform als Ausdruck allergischer Zustande, Krankheitsforschung, vols. 2 and 3, 1926). The author studied sixty cases of schizophrenia, twenty cases of organic brain disease, which consisted of dementia paralytica and epilepsy with mental deficiency, four cases of encephalitis, and six cases of manic depressive psychoses. He comes to the conclusion that there is a definite disturbance of the reticulo-endothelial system in schizophrenia such as one finds in mild intoxications of the organism. Cases of dementia paralytica show a similar disturbance. The results in manic depressive psychosis are inconclusive. The research is undoubtedly a valuable piece of work but the author's conclusions would have been more convincing had he given his results in a control group of cases.

The Life of Edward Jenner, M.D., F.R.S., Naturalist, and Discoverer of Vaccination. By F. Dawtrey Drewitt, M.A., M.D., F.R.C.P. Cloth. Price, $2; 6/-. Pp. 127, with portrait. New York & London: Longmans, Green & Company, 1931.

This book is planned for those who are neither doctors nor naturalists. It is, in other words, a popular life of the famous discoverer of vaccination. Few people realize that Jenner was an accomplished musician, a good amateur poet, a fairly good surgeon and an exceedingly proficient naturalist. Many of his essays on birds and animals have a classic quality. The little volume by Dr. Drewitt will be read by many persons who will not care to read the more extensive study in two volumes that was published long ago.

Die Krankheitsanfänge bei chronischen Leiden. 17 Vorträge gehalten zu Heidelberg vom 1.-3. August 1931 in der gemeinnützigen öffentlichen Krankenanstalt Sanatorium Speyerershof. Herausgegeben von Prof. Dr. A. Fraenkel. Boards. Price, 4 marks. Pp. 175, with 15 illustrations. Leipzig: Georg Thieme, 1932.

The early manifestations of disease, in contrast to the usual description, which is based on the fully developed clinical picture, forms the basis of the seventeen lectures constituting the material of this volume. These lectures were delivered at the Sanatorium Spyerershof in Heidelberg and were designed for the general practitioner in order to familiarize him with *those stages of disease which are most amenable to treatment.* Considerable emphasis is placed on periodic medical examination, aided by roentgenologic studies when necessary and supplemented by the "follow up" system as practiced in the United States. The subsequent lectures treat of renal disease, cardiac failure, diabetes, certain disturbances of the central nervous system, liver disorders, thyrotoxicosis and pulmonary tuberculosis. Each lecture contains several interesting features, most of which are of practical significance. *For example,* general fatigue and other vague manifestations, which cannot definitely be explained on the basis of myocardial failure, can be satisfactorily explained as due to cardiac weakness if there is rapid and definite relief after an intravenous injection of strophanthin. There is a definite need for a practical work of this sort, and this book will prove of value to the general practitioner who wishes to remain familiar with the more recent developments in the field of medicine, particularly as expressed by the views held by those who have contributed to this volume.

Medical Aspects of Old Age: Being a Revised and Enlarged Edition of the Linacre Lecture, 1922. By Sir Humphry Rolleston, Bart., G.C.V.O., K.C.B., M.D., Regius Professor of Physic in the University of Cambridge. Second edition. Cloth. Price, 7/6. Pp. 205, with 7 portraits. London and New York: Macmillan & Company, 1932.

The distinguished professor of physic in the University of Cambridge has assembled in a new form the data that constitute the basis of his lecture on medical aspects of old age, delivered in 1922 at Cambridge. Originally published in a brief volume, the lecture has now been expanded into a work of considerable proportions. There are ten chapters which consider the duration of life and causes of old age, the normal structural changes that occur, the factors that influence longevity, and diseases peculiar to old age, with special emphasis on cancer. Dr. Rolleston has availed himself particularly of the researches of Raymond Pearl and of Warthin's notable contribution to the subject. The literary qualities of any of Dr. Rolleston's articles are such as should commend them to the general reader; his reputation as a physician insures their accuracy. His book is thought provoking and will be read with interest not only by physicians but by many educated laymen.

A Method of Increasing the Sensitiveness of the Wassermann Test. By E. J. Wyler, M.C., M.D. Reports on Public Health and Medical Subjects, No. 67. Ministry of Health. Paper. Price, 4d. Pp. 15. London: His Majesty's Stationery Office, 1932.

Wyler, in this pamphlet, presents a method for raising the sensitiveness of the Wassermann method number 1, Medical Research Council, an improved technic of which he described in 1929, by increasing the quantity of serum used in the test. This method was included in the League of Nations' serologic conferences of Copenhagen (1928) and of Montevideo (1930) and was considerably less sensitive than the Kahn test; hence, presumably, the attempt to increase its sensitiveness.

The Dictionary Companion. By C. O. Sylvester Mawson, Litt.D., Ph.D. Cloth. Price, $3.50. Pp. 479. Garden City: Doubleday, Doran & Company, Inc., 1932.

This volume is planned primarily to help spellers, but it serves a most useful purpose in aiding the enlargement of a vocabulary and in pronunciation. There are several chapters dealing with pronunciation and spelling, several chapters indicating the origins of unusual words and other useful lists. Every one interested in words as such and in the improvement of their use will find this book an aid to the task. The author is the editor of the well known Roget Thesaurus and Dictionary.

Données actuelles sur l'hormone testiculaire (modes d'obtention et de caractérisation). Par L. Cuny, chef de travaux au laboratoire de physiologie pathologique de l'École des Hautes Études (Collège de France), et D. Quivy, assistante au laboratoire de physiologie pathologique de l'École des Hautes Études (Collège de France). Préface de L. Hallion. Paper. Price, 16 francs. Pp. 76. Paris: Masson & Cie, 1932.

This book gives an excellent account of work done in the search for the actual internal secretion of the testicle. The work is complete and the authors have listed the various experiments in chronological order. There is discussion of the physiologic effect of extracts made by numerous methods and evaluated on various types of animals.

Health Protection for the Preschool Child: A National Survey of the Use of Preventive Medical and Dental Service for Children Under Six. Report to the Section on Medical Service. George Truman Palmer, Dr. P.H., Chairman, Subcommittee on Statistics; Mahew Derryberry, Research Assistant; Philip Van Ingen, M.D., Chairman, Committee on Medical Care for Children. White House Conference on Child Health and Protection. Cloth. Price, $2.50. Pp. 275. New York: Century Company, 1931.

This is another of the reports emanating from the White House Conference on Child Health and Protection. The report is divided into four parts. The first deals with the general status of preventive measures for children over the country. The second part gives the results of the survey of the use of preventive medical and dental service for preschool children in 156 cities and in the rural areas of forty-two states. The third part contains detailed statistical tables, while the fourth part presents administrative features of the survey. The chief value of this work is that it provides a comprehensive picture of the use of preventive measures among preschool children throughout the United States, and indicates the direction in which preventive medicine must direct its efforts in order to produce the maximum of good health among preschool children. Of course, a great variation in the application of preventive medicine is found in the different cities throughout the country. Health examinations seem to be more common in cities than in the rural districts, while in only six states do dental health examinations exceed the rural area. Cities are definitely superior in vaccinations, while diphtheria immunizations show an equal distribution in cities and in rural territory. Those interested in the application of preventive measures for preschool children will find this report well worth studying.

Chirurgie de la tête et du cou. Par Ch. Lenormant et Pierre Brocq. Seventh edition. Cloth. Price, 40 francs. Pp. 381, with 320 illustrations. Paris: Masson & Cie, 1931.

This is a small book containing the technic of operations on the head and neck. There are many illustrations, which are not as successful as they might be in suggesting the actual steps of the operation. One reads that the operations described are those which the authors' experience as prosectors and surgical practice have agreed on as the procedure of choice. This disregard for operative procedures in the surgery of the brain originated and transmitted to continental Europe by Americans is astonishing. The technic of any given operation cannot be taught by reading a textbook description, and to present a monograph with such an idea as a basis is fundamentally wrong.

Medicolegal

Sufficiency of Complaint in Revocation Proceedings

(Anderson v. Board of Medical Examiners (Calif.), 3 P. (2d) 344)

A sworn complaint was filed with the state board of medical examiners of California, charging the defendant-physician with unprofessional conduct in that she aided and abetted a named unlicensed person to practice a system and mode of treating the sick and afflicted. After notice and hearing, the board found the charges proved and revoked her license to practice medicine. She sought to annul the action of the board by successive appeals to the superior court, city and county of San Francisco, and to the district court of appeal, first district, division 1, California. The complaint on which she was tried by the board, the defendant contended, was legally insufficient because it failed to set forth the specific acts relied on as constituting aiding and abetting.

In California, said the district court of appeal, if the language of the statute on which an accusation filed with the board of medical examiners is based is sufficiently explicit to advise the person charged of the particular kind of unprofessional conduct of which he is accused, an accusation following that language is legally sufficient to confer jurisdiction on the board to hear and determine the matter. Section 14 of the medical practice act (Stats. 1927, p. 99) authorizes the board to revoke certificates to practice for "unprofessional conduct." Various acts are named which are deemed to constitute "unprofessional conduct," among which is ". . . aiding or abetting any unlicensed person to practice any system or mode of treating the sick or afflicted." The accusation filed with the board follows the language of the statute and is sufficiently explicit to inform the person charged with the particular kind of unprofessional conduct of which he is accused. The words "aid" and "abet" are commonplace words, the meaning of which is well understood. Their legal definition is no different from their meaning in common parlance. The word "aid" means to assist, to supplement the efforts of another. "Abet" includes the elements of knowledge of the wrongful purpose of the perpetrator and counsel and encouragement of the illegal act.

The plaintiff relied apparently on *Dyment v. Board of Medical Examiners*, 57 Calif. App. 260, 207 P. 409, in which the accused was charged with having "procured by fraud and misrepresentation a certificate to practice medicine." The accusation in that case was held to be legally insufficient because the accusation did not set forth any of the facts relied on as constituting fraud and misrepresentation. But the word "fraud," said the district court of appeal, unlike the words "aid" and "abet," has no fixed, definite meaning. It is an inference of law to be drawn from facts and circumstances alleged and proved. It can and does assume so many shapes that courts and authors have been cautious in attempting to define it. Each case in which fraud is claimed to be involved must be considered under its own facts. An allegation of fraud in general terms presents no issuable fact. The facts constituting the fraud must be pleaded with particularity. No such difficulty, however, presents itself in accusing one of the aiding and abetting a named unlicensed person to practice.

For the reasons stated, the order of the board revoking the physician's license to practice was affirmed.

Malpractice: Homeopathic Physician as Expert Witness Concerning Nonsectarian Surgical Standards.—The defendant, an "allopathic" physician, was sued for damages for malpractice in removing a cyst. Over the defendant's objection, a homeopathic physician was permitted to testify as to the defendant's care and skill. A witness, said the Supreme Court of California, on appeal, may testify as an expert if he discloses knowledge of the subject sufficient to entitle his opinion to go to the jury. No rule of law prevails in California precluding a physician trained in one school of medicine from testifying as to the treatment rendered by a physician trained in a different school. Such a rule might be promulgated if the charge of malpractice was based on some special course of treatment to be tested by the general doctrine of a particular school. Such a rule is not applicable, however, to a case in which the alleged malpractice is based on general charges of negligence with respect to matters of almost common observation within the experience of every physician. All schools of medicine require their adherents to exercise care in surgical work to insure cleanliness, proper sterilization of instruments, treatment of wounds after operation, and precautionary measures to prevent infection. In the opinion of the Supreme Court, the homeopathic witness in this case was fully qualified to testify as to the propriety of every act of negligence alleged to have been committed by the defendant.—*Hutter v. Hommel (Calif.), 3 P. (2d) 554.*

Liability of Physician for Hot Water Bottle Burn.—An unconscious patient was burned by hot water bottles placed in the patient's bed by a special nurse. If, said the Supreme Court of Idaho, the physician was present when the hot water bottles were put into position by the nurse, he was in complete charge and under a duty to see that the nurse placed them in such a way as not to burn the patient. Even if the nurse should be deemed an independent contractor, she was under the circumstances under the physician's actual supervision and was for the moment his employee, and he was liable for her negligence resulting in injury to the unconscious patient.—*Davis v. Potter (Idaho), 2 P. (2d) 318.*

Evidence: Privileged Communications Between Patient and Examining Physician.—Information obtained by a physician who examines a patient at her own request and makes and delivers to her counsel a written report of his findings, to aid her counsel in the presentation of her cause, is privileged under the California statute which makes privileged in civil actions any information acquired in attending a patient which was necessary to enable a licensed physician "to prescribe *or act* for the patient." In any event, since the patient caused herself to be examined and a report to be made to aid her counsel in the presentation of her cause, the information obtained by her physician was privileged under the statute that confers a privileged status on communications between an attorney and the agent of his client, the same as to communications passing directly between an attorney and his client. Although the statutes provide that a person who brings action to recover damages for personal injuries thereby consents that any physician who has prescribed for or treated him and whose testimony is material in the action shall testify, a patient who brings such an action does not waive his privilege with respect to information obtained by a physician employed by the patient, not to prescribe for or treat him, but to act for him in the making of an examination to aid in the prosecution of the patient's cause.[1]—*Webb et al. v. Francis J. Lewald Coal Co. et al. (Calif.), 4 P. (2d) 532.*

Compensation of Physicians: Liability of Third Person on Promise to Pay Another's Medical and Hospital Bills.—Where medical and hospital services have been rendered an adult on the oral promise of the adult's father to pay the "bills incurred at the hospital," the father is liable therefor. The fact that the promise was oral and not in writing does not bar the action; the statute of frauds denying recovery on an oral promise to pay the debt of another person does not apply. The father's promise was made before the services were rendered or any debt therefor created, and the credit was extended solely to him. His promise to pay, therefore, was original and not within the statute.—*Drummond v. Pillsbury; State Street Hospital v. Same (Me.), 156 A. 806.*

Charitable Hospitals: Liability for Burn by Hot Water Bottle.—A charitable institution conducting a hospital solely for philanthropic and benevolent purposes is not liable to a pay patient for damages sustained by reason of a burn caused by the negligent placing of a hot water battle.—*Sibilia v. Paxton Memorial Hospital (Neb.), 238 N. W. 751.*

Society Proceedings

COMING MEETINGS

American Congress of Physical Therapy, New York, Sept. 6-10. Dr. F. B. Balmer, 185 North Wabash Avenue, Chicago, Secretary.
Colorado State Medical Society, Estes Park, Sept. 8-10. Mr. Harvey T. Sethman, 227 16th Street, Denver, Executive Secretary.
Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS

Forty-Seventh Annual Meeting, held at Atlantic City, N. J., May 3 and 4, 1932

(Concluded from page 166)

Further Studies on the Etiology of Simple Goiter

Dr. David Marine, New York: The discovery was made by Chesney, Webster and others that feeding rabbits with cabbage often caused marked thyroid enlargement. It was felt that this provided a practical means for the further study of goiter. The material used was easily obtained and the animal an easy one to study. A search was made for the factor, in cabbage that stimulated thyroid hyperplasia. Some of the facts that came out of the study were as follows: Dr. Webster found that there was a great seasonal variation in the constituents of cabbage. Spring and summer cabbages were inert. Autumn cabbage may be inert but may cause hyperplasia. There are also annual variations. Cabbage was most potent in 1928-1929 and next in 1931. There is also a geographic variation, and different locations vary in different years. Iodine is not an important factor. There may be high iodine content with low thyroid stimulation. One can steam cabbage or boil it half an hour without impairing the goiter stimulant. Drying the cabbage entirely removes this product. Pressed juice is quite inactive. The cabbage cake left from pressing retains its full power. The substance therefore is not removed with the juice. Cabbage cake mixed with distilled water does not affect the water; therefore the substance appears water insoluble and other solvents must be sought. The ether extract has been found powerful. It is probable that all Cruciferae, such as cauliflower, rutabaga, mustard and broccoli, have this substance. It is possible that the substance is connected with the mustard oils or cyanide precursors. So far the mustard oils have given negative results. In the distillation of mustard oil from mustard meal, cyanide is carried over. Organic cyanide has been extracted from three of the Cruciferae by steam distillation. The inorganic cyanides (allyl, ethyl, phenyl) are highly poisonous. It was possible, however, to use acetyl nitrate. Injection of this hastened sexual maturity in the animals and stimulated the thyroid. Sometimes bilateral exophthalmos was produced as early as the twentieth day, sometimes not until the sixtieth day. Eighty per cent of the injected animals got hyperplasia, and 60 per cent got protrusion of the eye. The exophthalmos was not marked.

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[1] Reversing Webb et al. v. Francis J. Lewald Coal Co. et al. (Calif.), 297 P. 958; J. A. M. A. 98: 578 (Feb. 13) 1932.

DISCUSSION

Dr. Joseph Miller, Chicago: Iodine in inorganic form may be stored in the thyroid. There is no doubt that a colloid storage of inorganic iodine occurs, but in hyperplasia of the acini the colloid must disappear. There is no longer storage of the inorganic iodine, which is then thrown into the circulation. This accounts for the symptoms in toxic goiter. It has not been explained why hyperplasia takes place. This work of Dr. Marine is interesting. With cyanide he can produce hyperplasia of the thyroid. This cyanide affects the cellular oxidation, which leads to the corresponding hyperactivity of the thyroid in the endeavor to counteract this. I should like to know what other materials besides cyanide lessen cellular oxidation. This opens up an interesting field in the etiology of hyperplastic goiter.

Dr. G. A. Harrop, Baltimore: Has Dr. Marine any evidence that acetonitrile really alters respiratory metabolism? He spoke of enlargement of the suprarenal medulla. Is there any change in the cortex as well?

Dr. A. M. Chesney, Baltimore: Was any correlation observed between the exophthalmos and the size of the goiter?

Dr. David Marine, New York: In relation to the historical question, the idea that the thyroid compensates for lack of oxygen is an old theory. Low oxygen pressure has some effect on the thyroid as on cyanosis. The thyroid tries to overcome the block of tissue oxidation. In regard to Dr. Chesney's question as to exophthalmos in relation to large goiters, I don't think that the production of exophthalmos is rapid. As regards changes in the cortex, I think there is hypertrophy to some extent of the cortex, and in some animals there is hypertrophy of the ovaries, which is associated with hastening of the sexual function. As to whether there is any relation between the size of the goiter and the exophthalmos, goiters have not been produced larger than 1.5 Gm.; there is, however, a relation between the rapidity of the production of the goiter and the exophthalmos.

The Identity of the Thyroid Adenomas

Dr. William Boyd, Winnipeg, Manit.: My studies have distinguished three groups of goiter: (1) diffuse colloid goiter, or simple colloid goiter, (2) diffuse hyperplastic goiter and (3) adenomatous goiter. I have given especial attention to the third class. Benign adenoma is formed of epithelial tissue with glandular elements; the adenoma and the thyroid are sharply distinguished, but often the whole gland is converted into adenoma. The lesion is opaque, dense, and more elastic. The thyroid is a lobular organ, and its pathologic changes are similar to those of the breast. The lobule gets hyperplastic and then undergoes involution. I do not call this neoplastic. It is a colloid nodular lesion. In regard to fetal adenoma, it is suggested that there are new growths of epithelial cells between the acini. Some workers regard these as fetal rests. Acini are separated by interacinous material. There is also an extra-acinous budding characteristic of fetal adenoma. One of the fundamental signs of fetal adenoma is degeneration caused by fading of the acini into interacinous material, probably caused by interference with the vascular supply. I have spoken of fetal and of colloid types, but the difference is not really fundamental. I believe the fetal form is a degeneration of some other form. From this morphologic consideration follow these conclusions: (1) The identity of ordinary thyroid adenoma as a true neoplasm may be seriously challenged; (2) the cycle of changes by which the thyroid responds is goiter, although the final picture may be altered beyond recognition. This work is not original. Dr. Marine's studies preceded mine by many years.

Further Studies on the Action of the Suprarenal Cortical Hormone

Drs. George A. Harrop, Jr., and Albert Weinstein, Baltimore: During the past two years we have treated nine cases of Addison's disease with suprarenal cortical extract (Swingle-Pfiffner). From July, 1930, until July, 1931, our extract was supplied from Princeton by Drs. Swingle and Pfiffner. Since that time we have prepared it ourselves, and our material has had the same potency as that prepared at Princeton when assayed by determining the minimal kilogram dosage required for maintenance of adult suprarenalectomized dogs. No toxic effects whatever have been observed either on animals or in the clinic as a result of many hundreds of injections. However, we do not doubt that unskilfully or carelessly made preparations of the material may result in a toxic product. Recently we have been using extracts prepared from whole beef suprarenal, which has from 10 to 20 times the potency per cubic centimeter of the extracts as originally prepared from dissected cortex alone. This material may be used in at least one-tenth the dosage of the original extract. Instead of from 50 to 100 cc., only 5 to 10 cc. is required to treat the average patient successfully in relapse.

In the treatment of nine cases of Addison's disease there have been five deaths; in three, autopsy revealed marked or complete cortical atrophy; in one, bilateral suprarenal tuberculosis. Four patients are living, three in good condition with somewhat restricted activities. Our results indicate a relatively better effect on patients treated early in the disease and in those having few or no relapses. We think it quite possible that further damage is produced on the portions of the cortex still intact as a result of each successive period of relapse. There is absence of striking effect on weight or blood pressure, with the earlier type of extract made from cortex alone. Our further experience confirms the fact of the bad effect of measures that raise metabolism, such as fever, thyroid extract or exhausting exercise, and we stress the importance of accessory therapeutic measures, as rest, warmth, fluids and the use of dextrose.

The pathologic effects of cortical insufficiency may be illustrated by the clinical history and autopsy observations in an animal that was maintained on cortical extract for one year after bilateral suprarenalectomy and then allowed to die in suprarenal insufficiency uncomplicated by infection. The results of this autopsy showed malnutrition and atrophy of the internal organs. There was no glandular or thymus enlargement, congestion of the pancreas or important changes in the intestinal tract. It did show a gastric ulcer, which is common in dogs in the locality of Baltimore. Gastric ulcer is not common or characteristic in our dogs dying of suprarenal insufficiency. None of the endocrine glands were affected in an unusual way. The thyroid showed marked hypoplastic changes and there was central atrophy of the liver. The general picture was that of malnutrition and the atrophic changes characteristic of that condition. There was no evidence of stimulation of the thyroid.

In a given animal the minimal maintenance extract requirement varies with metabolic activity. Factors that increase metabolism (fever, exposure to cold, exercise and the injection of thyroid extract) increase the extract requirement or induce insufficiency. This is analogous to what is seen in patients with Addison's disease.

Further Studies in Addison's Disease

Drs. L. G. Rowntree and Carl H. Greene, Rochester, Minn.: Our material was obtained from Dr. Swingle. We have treated thirty-two patients between June, 1930, and June, 1931. In the beginning we had difficulties with reaction from toxic products, but during recent months the material has been nontoxic. Our results have shown (1) relief of anorexia, nausea and vomiting, and gain of appetite; (2) relief of fatigue and increase of strength; (3) disappearance of pain and improvement in sleep; (4) decrease in pigmentation; (5) gain in weight; (6) return of normal gastro-intestinal activity, and (7) change in blood pressure. We have found also that resistance to infection has been improved. These patients are extremely susceptible to infection. One man had an acute septic pneumonia. He was given large doses and made an uninterrupted recovery. In a control group of patients with various types of asthenia the results were negative, showing the specific nature of the hormone.

DISCUSSION

Dr. L. H. Newburgh, Ann Arbor, Mich.: I should like to ask the authors what method they used to determine the diagnosis. It is difficult to make sure one has an example of Addison's disease. There must be some sign that they rely on.

Dr. J. C. Aub, Boston: Many years ago, when working on the suprarenal, when I removed the gland, if the physiologic dose of epinephrine was given the metabolism returned to normal. The effect of epinephrine control was studied. I should like to know the relationship of these observations to the present work. What is the relation between the cortex and epinephrine and the metabolic processes in which both products occur?

Dr. George A. Harrop, Jr., Baltimore: I think I should lay stress on the fact that the observations that I have reported were made on animals operated on and allowed to get along on maintenance doses to avoid any complication to the surgical shock. That is extremely important. These operations were done on animals in which there can be no question of complications arising as the result of the operation or of the anesthetic. I have not found prolonged rise in the basal metabolism as the result of injection of epinephrine. The results have not been an evanescent rise in metabolism. The results are constant and have lasted during employment of the procedure. One other point, there is a curious cachexia or undernutrition that sometimes follows injections, just as in severe distemper, in these animals. They appeared markedly undernourished, lost fat, and showed marked evidence of anorexia There was marked lowering of the basal metabolism.

Dr. Carl H. Greene, Rochester, Minn.: The question of diagnosis is difficult. We have accepted only those cases in which we were certain beyond all question. Many patients have some weight loss, some asthenia, hypotension, and some pigmentation after infection. I agree that it is hard to distinguish these cases. In Addison's disease, in many patients there is tremendous loss of weight, sometimes as much as 65 pounds (29.5 Kg.); the average is 35 pounds (16 Kg.). The skin looks smooth, yet there is a great loss of weight. The lips, gums and palate show pigmentation. There is hypotension, and often there is evidence of past tuberculosis, which is always suggestive. We have found evidence of calcification in six out of twenty cases. At autopsy we found that 30 per cent of cases showed evidence of tuberculosis. Calcification is not significant in doubtful diagnosis. The therapeutic response can be used as a diagnostic aid in doubtful cases. When the patient makes distinct clinical improvement under therapy, it shows that he has Addison's disease.

Studies in Diabetes Mellitus

Dr. L. H. Newburgh and Dorothy S. Waller, Ann Arbor, Mich.: Many observers have noted that considerable amounts of carbohydrate may be added to the diet of the diabetic patient without causing glycosuria or increasing the need of insulin when the dietary fat is also sharply reduced. This phenomenon has been attributed to (1) stimulation of carbohydrate metabolism by carbohydrate, (2) interference with metabolism of carbohydrate by fat, (3) or by excessive intake of calories, and (4) the existence of a nutritional principle, hitherto unrecognized. This welter of conflicting suggestions may be reduced to a few simple quantitative statements by first studying diabetic patients who do not require insulin, and later by dealing with severer types to whom insulin must be administered. In that way it was shown that the inherent maximal capacity of a diabetic patient to dispose of the total available dextrose without glycosuria is unrelated to the type of diet. It is not reduced by fat or augmented by carbohydrate. It was further shown that the capacity of insulin to cause the metabolism of dextrose varies in response to two factors: (1) the total amount of dextrose to be acted on, and (2) the ratio between dextrose and insulin. For example, in a patient whose tolerance was 174 Gm. of dextrose, the addition of 14 Gm. of dextrose required 10 units of insulin. Hence, each unit disposed of 1.4 Gm. of dextrose. As the carbohydrate of the diet was further increased, insulin became progressively more efficient until 1 unit disposed of 7 Gm. of dextrose when the latter exceeded the tolerance by 100 Gm. Finally, it was shown that further increases in carbohydrate beyond this point were not attended by further increase in the efficiency of insulin. A sharp maximum had been reached.

Treatment of the Same Diabetic Patient with Widely Varying Diets

Drs. Solomon Strouse and Samuel Soskin, Chicago: We have frequently made the observation that, under the controlled conditions in the Max Pam Metabolism Unit of Michael Reese Hospital, the diabetic manifestations of our patients could be kept well under control by many dietary systems. Since the discovery of insulin an increasing breadth of possibilities regarding food intake has been recognized. Patients wandering from clinic to clinic do equally well under widely varying diets, perhaps because of some common denominator, such as a comparatively low calory intake.

Our patients were maintained in the metabolism unit throughout the entire period of these experiments. Each patient was treated with three successive isocaloric diets: (1) relatively high in carbohydrate, (2) relatively high in fat, and (3) relatively high in protein, respectively. During each period sufficient insulin was given to control the diabetic manifestations to about the same degree, but we purposely did not attempt to render the urine entirely sugar free. The diets varied widely in composition, more widely than would be the case in therapeutic diets encountered at different clinics, but not as widely as possible, in order to avoid untoward subjective reactions of the patients. The order in which the diets were given varied in the different patients. The change from lower to higher available carbohydrate usually was made in transitional steps, but the reverse change usually was abrupt.

A study of the charts shows that diabetic manifestations of all patients were adequately controlled on the various diets and there is nothing to indicate that each of these diets could not have been continued indefinitely. Subjectively, almost all the patients preferred the high carbohydrate diet. The insulin requirements during the high fat diets were not quite half that of the other periods but, considering the extreme range of our diets, a comparison of the carbohydrate tolerance and insulin coefficient during these periods shows the remarkable flexibility in management allowed by a small difference in insulin. From the standpoint of the patient who has to receive insulin, it makes little difference whether 17 or 33 units is injected during the day.

It seems to us to be axiomatic that, in all dietetic therapy, the goal should be as near an approach to the normal diet as is consistent with the underlying pathologic conditions. All our patients required insulin and it is to such patients that our remarks are particularly directed. Our experiments reveal no reason for imposing markedly abnormal or disproportionate dietary mixtures on the diabetic patient. They further show that the diabetic manifestations of many patients can be equally well controlled on widely varying mixtures. The effort to approach a normal diet for such patients would therefore seem logical.

If this is so, the dietary objective in the diabetic patient treated with insulin should be to meet the demands of an individual leading a full normal life. In most instances of uncomplicated diabetes this can be accomplished by a comparatively simple study of the individual patient's needs and desires and the demands of his diabetes. In other words, we believe that the problem of feeding insulin treated diabetic patients does not involve the application of formulas or strict adherence to any particular type of diet. Since these patients do equally well on widely varying diets, the question involved is not one of high fat or high carbohydrate but of a well balanced, comparatively normal regimen.

DISCUSSION

Dr. Elliott P. Joslin, Boston: I quite agree with the conclusions of the authors. It isn't necessary to go to extremes in diet. I think a change is useful. I think it would be interesting if Dr. Newburgh would tell what his carbohydrate is that the average patient takes now. I know his cases because I have had the same experience. I don't think any of the men who advocate high carbohydrate diet are here, but I have come to believe that much more carbohydrate should be given than is customary. A year ago at the Deaconess Hospital 143 Gm. was given and this year 144. It seems to me that digestion was better. Most physicians have tried to avoid extremes in diet.

Dr. F. M. Allen, Morristown, N. J.: I think certain points should be made clear, which may be missed. High carbohydrate diet depends on the question of insulin. In the days before insulin it was not so material whether one gave high carbohydrate, but if one exceeded a certain limit one lost his patients. Now the difference in the patient's diet depends on the insulin dosage. On the one hand is the tolerance of the patient and on the other the pharmacology of insulin. Even with insulin the tolerance may be broken down. As regards the experiments of Drs. Strouse and Soskin on the high caloric diet they are correct. That idea was worked out ten years ago. Fat people and thin people react differently to insulin. Obese persons need more insulin. Insulin has some relation to carbohydrate. I don't know its function. Up to the present no direct reaction between insulin and carbohydrate has been demonstrated. It is not known whether it acts on carbohydrate alone. This is markedly shown when amounts are varied. The relation of insulin to body weight is invariable, but its relation to dextrose differs greatly. When I was planning to use insulin in tuberculosis, I gave 1,000 units per kilogram but did not find any definite relation of insulin to carbohydrate alone.

Dr. Herman O. Mosenthal, New York: The relation between insulin and carbohydrate can be stated in this way, that proportionately better results are obtained from small doses of insulin than from large doses. The amount of carbohydrate digested is larger with smaller doses. One such example was the case of a boy not sugar free with three doses of 50 units, but when he was given 10 units four times a day he became sugar free on the same diet. Sugar tolerance depends on the renal threshold of dextrose. That has not been worked out. On the old starvation diet, it was lower than with the high fat diet. With high starch diet or high protein diet there was a renal threshold of 200 before dextrose appeared. Many patients tolerated the high starch diet well and did better than when they were on the ordinary diet. If they are on the high starch diet and they get diminished tolerance for dextrose with the same dose of insulin, changes have to be made to a lower starch diet to reinstate the tolerance.

Dr. Campbell, Toronto, Ont.: Diets high in carbohydrate are not successful if they lack the basal dextrose requirements. This is not adequate therapy for diabetes. The diabetic patient needs to be brought back to sufficient caloric intake to restore his economic status. Calories are important in the treatment of the diabetic patient. Some of these high carbohydrate diets may be too high. It is necessary to have the patients studied for six months and have them come back several times to be tested. In certain cases they may appear to do well on a high carbohydrate diet for two weeks, but if it is carried out longer it may destroy their tolerance. A high carbohydrate diet must be tested out for a longer period.

Dr. L. H. Newburgh, Ann Arbor, Mich.: In answer to Dr. Allen, I began to use a high fat diet in 1918. My associates and I have had continuous experience with it ever since. I had a young physician with severe diabetes on that diet for nine years, without any change in the plan and without change in the dosage of insulin. The condition was the same as if he had become stabilized. We have had many patients on the high fat plan for many years and we cannot see any harmful effects. We have before us an ideal which requires us to avoid the use of insulin whenever we can. We begin with low carbohydrate, 1,000 calories, chiefly consisting of fat, and then go up gradually till we reach the tolerance of the patient. If we reach tolerance without insulin we give carbohydrate with insulin. If the patient wants more carbohydrate he can have it if he wants to be burdened with insulin. There is a relation between a large amount of dextrose to be acted on and the amount of insulin. We do not give more than we can deal with with small amounts of insulin, but we know that it will not take more insulin for 100 Gm. of dextrose than for less than that amount. We give as much carbohydrate as we can control with the insulin.

Dr. Solomon Strouse, Chicago: We used exaggerated types of diet to prove some points. Patients receiving insulin are placed on a moderate diet that approaches the normal as nearly as possible. With the use of insulin one can give the patient a diet as nearly normal as possible with sufficient calories, a diet that the patients ask for.

The Relation of Blood Sugar to Plasma Cholesterol

Dr. Herman O. Mosenthal, New York: Certain factors will influence the plasma cholesterol level in diabetes mellitus:

1. Acidosis raises the plasma cholesterol remarkably. 2. Malnutrition lowers the plasma cholesterol. 3. High fat diet over a long period elevates the plasma cholesterol.

These facts are well established but they do not necessarily exclude variations in the blood sugar as an influence on the plasma cholesterol. This relationship was investigated by determining simultaneously blood sugar and plasma cholesterol values in persons while fasting and, subsequently, at intervals of 20, 40, 60 and 120 minutes after the ingestion of 100 Gm. of dextrose. Ninety-five observations in all were carried out. Controls showed that the maximal deviation of plasma cholesterol in the absence of the eating of sugar was ± 7.8 per cent. Any variation above or below this amount was considered either an increase or a decrease secondary to the ingestion of sugar.

It was found that as the blood sugar rose the plasma cholesterol would either rise, remain unchanged or diminish. In one case the plasma cholesterol rose 107 mg. (from a control of 193 to a level of 300), and in one case it fell 82 mg. (from a control of 270 to a level of 188). In persons with a normal sugar tolerance, sixty minutes after the taking of dextrose, the plasma cholesterol rose in 45.4 per cent of the cases, remained constant in 40 per cent and diminished in 14.6 per cent. In subjects with a diminished sugar tolerance, the plasma cholesterol, in two hours, dropped or diminished in 40.5, remained constant in 29.9 and increased in 29.8 per cent.

The effect of the blood sugar on the plasma cholesterol appears to be influenced by two forces:

1. A compensatory osmotic effect that would tend to lower the plasma cholesterol as the blood sugar rises.
2. Some factor that elevates the plasma cholesterol, which presumably is associated in some manner with the metabolism of dextrose.

A rise in blood sugar may therefore be regarded as having an influence on the level of the plasma cholesterol. The relation between the blood sugar and the plasma cholesterol in any case of diabetes mellitus is difficult to interpret because the plasma cholesterol may either rise or fall as the blood sugar increases and, furthermore, because there are other influences (acidosis, malnutrition, high fat diet), which modify the concentration of the cholesterol in the plasma.

DISCUSSION

Dr. Elliott P. Joslin, Boston: I think it is difficult to draw conclusions about the influence of dextrose on the plasma cholesterol, between our friends Drs. Allen and Newburgh. I have one of Dr. Allen's patients under my care who was treated before insulin was discovered. He insists on keeping to the old treatment of 50 Gm. of carbohydrate. His plasma cholesterol a year ago was 223 mg. and this year it is 219 mg. He has lived on a high fat diet and refuses insulin. He preaches every Sunday and does so well that I do not want to break in and change his diet. These experiments of Dr. Mosenthal may throw more light on the subject. He mentioned arteriosclerosis. I think that diabetic children who have grown up since insulin was discovered do not show arteriosclerosis as did the previous group. This is an encouraging factor. These children have not shown cataracts either. About 80 per cent of the cases show a higher plasma cholesterol than normal.

Conservative Treatment of Gangrene of the Feet by a Selected Temperature, Oxygen and Desiccation

Drs. Alfred Stengel and Isaac Starr, Jr., Philadelphia: The fact that persons with peripheral vascular disease come to the hospital chiefly in the winter suggested that the environmental temperature must play an important part in the production of acute lesions. So the effect of temperature on the circulation of the feet of such patients was studied. Eleven cases with gangrene or ulcers of the feet were chosen. The lower extremities were placed in a water or air bath and the temperature was slowly raised. Skin color was recorded by the scale of Lewis. At temperatures under 30 C. the feet showed varying degrees of cyanosis and the patients complained of pain. Between 33 and 35 degrees, pain diminished or disappeared and the color of the feet most closely approached the normal. Above 35 C., cyanosis reappeared and pain returned.

Therefore we have employed a temperature of between 30 and 35 C. in the treatment of these conditions, maintaining it around the feet day and night by means of a thermoregulated foot cradle. Under such conditions some patients preferred temperatures differing slightly from that which they chose in the acute experiment, so we have used between 32 and 37.5 C. for prolonged treatment. All patients agreed that they were more comfortable than before this temperature was employed, and in about half the cases relief was complete within a few days. In three cases in which surgeons had amputated toes but had been unable to secure healing of the wound, such healing took place. Failure to relieve pain was encountered when the gangrene was ascending, so we sought other methods.

Oxygen was used as a means of local treatment. Seven patients with gangrene had their feet placed in jars in which the oxygen content was slowly raised to 80 per cent, at which point relief was obtained. The cover of the jar was bandaged to the knee in such a manner that concentration was maintained. Gangrene was not stopped but pain was relieved. Calcium chloride was placed inside the cradle, so that the feet were in warm dry air. Wet gangrene was noted only when the toes touched and the air did not reach. When the toes were kept apart, the gangrene dried up and hardened.

One patient, who could not be operated on because of congestive heart failure, had embolic gangrene and was treated for two months. A line of demarcation of gangrene formed below the knees and deepened to the bone. The treatment could not be continued because the stumps became infected, so they were amputated below the knee without anesthetic or pain. The stumps were cleaned up with maggots. They were healed and granulating one month later, when the patient died of decompensation. We believe that the use of these conservative methods will lead to the preservation of much tissue which is at present lost because the amputation must be performed so far above the level of the lesion.

The Clinical and Pathologic Picture of Follicular Lymphoblastoma

Dr. George Baehr, New York: Attention is directed to the occurrence of a variety of lymphadenopathy and splenomegaly that is characterized clinically by a prolonged course, a normal blood picture and freedom from fever, cachexia, profound anemia and other constitutional manifestations until late in the disease. The enlargement of the lymph nodes and of the spleen is due to the production of huge lymph follicles, which present the appearance of enormously enlarged germinal centers, composed of lymphoblasts and prelymphoblasts, surrounded by a narrow zone of small, darkly staining lymphocytes. Follow-up observations in nineteen cases indicate that the condition is a distinctive variety of lymphosarcoma which may manifest more malignancy and invasive characteristics later in the disease. It is therefore designated follicular lymphoblastoma.

At the stage in which most patients first come under observation the microscopic picture of an excised lymph node gives the appearance of being related to the systemic hyperplasia of the lymphatic tissue, and the pathologist is apt to be fortified in this interpretation of the process by deceptively reassuring reports of the clinical observations. On the other hand, when the case is not seen until late in the disease, or at necropsy, the gross appearance of the lymph nodes suggests ordinary lymphosarcoma. Thus the histologic architecture and the unusual clinical features may be overlooked. The remarkable radiosensitivity of the growth is due to the fact that it is allied ontogenetically to normal lymphatic tissue, the body tissue most sensitive to gamma rays. The disease should be classified in a distinct manner because it is so responsive to irradiation in the early stages.

DISCUSSION

Dr. William Boyd, Winnipeg, Manit.: Dr. Baehr has made a differentiation in his conclusions. He has differentiated the lymphocytes and the reticulo-endothelial cells. He has spoken of hyperplasia of the germinal centers. Many people regard these cells as of the reticulo-endothelial type. I should like Dr. Baehr's opinion as to whether sarcomas of that type respond to irradiation.

Dr. George Baehr, New York: The primitive mesenchymal cell is differentiated into two types, the reticulo-endothelial cells and the lymphoblastic cells. This differentiated reticulocyte is one of the cells most resistant to the x-rays. The lymphoid cell is one of the most sensitive to radiotherapy. We believe as a result of cytologic observations that the type of cell here involved is differentiated from the primitive type of mesoblastic cell, which is a kind of lymph cell rather than a reticular cell. That may explain the remarkable pathologic picture and clinical course and also explain the remarkable sensitivity of the cells to the x-rays.

Further Studies on the Mechanism of Pain in Gastric and Duodenal Ulcer

Drs. Walter L. Palmer and T. E. Heinz, Chicago: In our studies on these patients we have found that they can be kept free from pain if the free hydrochloric acid is kept at zero. In a case of duodenal ulcer, the patient was extremely sensitive to pain; the dosage of 1 mg. of atropine did not minimize the pain, but washing out the acid immediately gave relief of pain. We have found that when the patient's own gastric juice touches the ulcer it causes pain. We have tried to desensitize to pain by injections of calcium chloride intravenously. They may relieve pain but they cause nausea. However, one can keep the patients free from pain by keeping the gastric juice neutralized.

Observations on the Experimentally Produced Pathology of the Liver

Dr. Frank C. Mann, Rochester, Minn.: My associates and I have carried out a series of investigations on the experimental pathology of the liver. The purpose of these investigations was twofold: First, to produce chronic hepatic insufficiency and to study the various functions of the liver in conditions that would simulate pathologic states found in the human being. Second, to determine some of the factors producing the various pathologic changes noted in the liver.

It soon became apparent that if the various pathologic changes produced in the liver were to be understood, it was essential to determine the cause of the most outstanding characteristics of the organ: its remarkable power of restoration after injury or partial removal. Restoration of the hepatic tissue after injury by any of the common hepatic poisons is usually rapid and complete. A more striking way of showing the capacity of the liver for restoration is by a study of the effects of partial removal of the organ. A large percentage of the organ can be removed from an animal and in a few weeks the remaining portion has increased to an equal or even greater size than the original organ. It is obvious that this characteristic of the liver is of fundamental importance in the development of hepatic lesions. A physiologic need for hepatic tissue has usually been the factor ascribed for the quick and complete restoration of the liver after partial removal. The results of our investigations indicate that the major factor causing restoration of the liver after partial removal is the portal circulation. This statement is based on the following facts: 1. Restoration is decreased following partial occlusion of the portal vein in rats. 2. It is usually altogether absent in a dog with an Eck fistula. 3. It is usually absent in the chicken, in which species there is a natural anastomosis between the portal and the systemic venous system. However, if the blood flow through the liver of this species is increased by occlusion of the post cava, restoration occurs to a marked degree. 4. Restoration does not occur in dogs in which a stoma between the vena cava and the portal vein is made without the ligation of either vessel.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

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*Microscopic Cerebral Hemorrhage in Stillbirths and New-Born Deaths: Study of Fifty-Three Infants with Relation to Minute Hemorrhages of Medulla Oblongata. F. A. Hemsath, New York, and Myrtelle M. Canavan, Boston.—p. 471.

*Osteomalacia in Pregnancy. W. J. Dieckmann, Chicago.—p. 478.

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*Study of Menstrual Histories of Two Thousand Two Hundred and Eighty-Two University Women. Ruth E. Boynton, Minneapolis.—p. 516.

Obstetric Transverse Diameter: Significance of Its Measurements by Roentgen-Ray Pelvimetry. W. C. Stude and V. E. Scherman, St. Louis.—p. 524.

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*Oral Administration of Sodium Amytal in Eclampsia. E. C. Hamblen and D. O. Hamblin, University, Va.—p. 592.

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Atomizer for Vaginal Antisepsis During Labor and Vaginal Medication in Gynecologic Practice. C. E. Ziegler, Pittsburgh.—p. 600.

Kidney Function Tests in Differentiation of Toxemias of Pregnancy.—Stander and his associates report that of the Mosenthal, phenolsulphonphthalein, diastase, thiosulphate, urea concentration factor, urea clearance, guanidine and creatinine excretion tests, the latter three proved of real value in the differentiation between mild nephritis and the other toxemias of pregnancy. They recommend the urea clearance and creatinine excretion tests for routine use in all cases of toxemia of pregnancy in which the diagnosis is not clear. A urea clearance of below 80 per cent of the mean normal, and a creatinine excretion below 155 mg. in the first hour, are strongly indicative of renal damage.

Cerebral Hemorrhage in Stillbirths and Deaths of New-Born Infants.—In microscopic examination of a single or two sections of the medulla oblongata in stillbirths and dead new-born infants, Hemsath and Canavan found microscopic hemorrhages in thirty-four instances (64 per cent) among an unselected series of fifty-three necropsies. In twelve cases this observation supplied an anatomic cause of death that would otherwise have been lacking.

Osteomalacia in Pregnancy.—According to Dieckmann, osteomalacia must have an earlier stage than the one which is characterized by marked deformities of the bones. The diagnosis should be made on the symptoms and evidence of calcium deficiency, as determined either by metabolism studies or by an analysis of the diet. The serum calcium need not be subnormal to warrant a diagnosis of osteomalacia, nor do the bones in the early stage show any signs of absorption perceptible to the roentgen ray. There is a definite association between pregnancies at short intervals, insufficient or improper diet and the occurrence of pain in the symphysis, back and thighs, and difficulty in walking. The diet of the pregnant woman should be carefully supervised in that it should contain sufficient calcium and phosphorus, butter and milk, and fresh vegetables and fruits for the vitamin content. In many patients, especially when there is an economic problem, the diet should be supplemented with calcium and cod liver oil. This applies in particular to the Negro race. The result will be that the women will have less disability because of calcium deficiency and less decay and softening of teeth. The baby will be started with its proper store of calcium and phosphorus and will be less liable to develop rickets. Furthermore, since the deciduous teeth are formed in utero, they will have their proper composition and be less likely to decay.

Menorrhagia Due to Hypothyroidism.—Waters and Williams state that excessive bleeding is the menstrual disturbance most frequently associated with hypothyroidism, amenorrhea rarely, if ever, occurring when the thyroid alone is deficient in function. In patients of any age whose menorrhagia cannot be attributed to pathologic changes in the pelvis, a therapeutic test with thyroid administration should be given before more radical measures are instituted. Definite hypothyroidism may occur in the presence of an apparently normal basal metabolism. The importance of the basal metabolic rate has been overemphasized in the diagnosis of variation in thyroid activity; disturbance of metabolism should be accepted only as one evidence of disease. Clinical acumen remains the principal agent of the physician in the detection of thyroid disturbances and cannot be supplanted by any laboratory procedure. The response of the symptoms of hypothyroidism, including menorrhagia, to substitution therapy furnishes the most reliable evidence that the thyroid is deficient in function.

Induction of Labor at Term.—Slemons' method of induction of labor at term consists in the rupture of the membranes and the intranasal application of pituitary extract after the preliminary administration of castor oil and quinine. Each of these steps is a familiar procedure, used independently to bring on labor. Each proves quite satisfactory, when effective; but one cannot predict when it will be so. On the other hand, the three procedures employed in succession may confidently be relied on. Since the method runs counter to orthodox obstetric teaching, certain comments of a theoretical character are made briefly in conclusion. The author refers to the mechanism of cervical dilatation, which is ascribed, almost axiomatically, to the action of a hydrostatic wedge composed of the membranes and the amniotic fluid. This medium, it is assumed, transmits the force of the uterine contractions and pushes aside the cervical barrier of the birth canal. In the author's judgment, that hypothesis is disproved, as far as negative evidence can do so, by the course of labor following induction by rupture of the membranes. Deprived of the possible action of such a mechanism, 132 labors suffered no handicap with regard to the first stage and terminated successfully. Nor did the presenting part of the fetus act as a substitute for the hydrostatic wedge. This contingency was kept in mind and excluded by careful, frequent rectal examinations during labor and by the later inspection of the infant's head, which presented merely the usual molding and but rarely a caput succedaneum. The development of cephalematomas did not occur in a single instance.

Placenta Praevia.—On the basis of an analysis of 158 cases of placenta praevia, Moskowitz believes that both maternal and fetal mortality can be considerably reduced if proper supervision of all bleeding cases is given early, while the patient is in good condition, rather than attempting to temporize too long. All vaginal examinations should be avoided, unless one is prepared to treat the patient immediately, for it may result in severe hemorrhage difficult to control. Every effort should be made to conserve blood and combat shock. If shock and hemorrhage are present, they should be treated first and labor induced if pains have not begun. Manual dilation of the cervix followed by version and extraction gives a high maternal and fetal mortality, and this form of treatment should be condemned. The routine insertion of a bag extra-ovularly in marginal and partial cases of placenta praevia has given satisfactory maternal results and has lowered the fetal mortality considerably. On account of the high fetal mortality due to prematurity and prolonged bleeding, the mother should receive first consideration. In all types of placenta praevia following the expulsion or removal of the placenta, the uterus should be firmly packed with iodoform gauze so as to favor contraction and retraction of the uterus. Frequently, on failure to observe this rule, relaxation of the uterus will occur which will result in a serious and sometimes fatal hemorrhage from one to several hours post partum. Blood transfusion is indicated in all patients who have a low red blood count, low hemoglobin, and a systolic blood pressure below 90, following hemorrhage and shock. During the past five years since this procedure has been more definitely used as a prophylactic measure in antepartum, intrapartum and postpartum cases, not only have the maternal and fetal results improved but the morbidity has been lessened and convalescence hastened.

Menstrual Histories of University Women.—Boynton presents a study of the observations in the menstrual histories and physical examinations of 2,282 university women. The incidence of dysmenorrhea was 20.38 per cent. The percentage of dysmenorrhea increased as the age increased up to 20 years, with a significant increase between the groups under 20 years and those over 20. The incidence of dysmenorrhea was lowest in the freshman year. In a small group of student nurses the proportion of dysmenorrhea was 6.98 per cent, compared to 20.38 per cent for the university women. The size of the town in which the student has lived has no relation to dysmenorrhea. The amount of physical exercise as reported by the student has no significant relationship to dysmenorrhea. Posture has no significant relation to dysmenorrhea, although the percentage of dysmenorrhea in the poorer posture groups was lower than in those with better posture. The mean systolic blood pressure, the mean height-weight percentage, and the mean hemoglobin percentage was significantly lower for those having dysmenorrhea than for the group having no pain. The mean vital capacity percentage was slightly higher for the dysmenorrhea group. The percentage of cases having dysmenorrhea was greatest in the lowest blood pressure group, the lowest height-weight percentage group and the lowest hemoglobin group. The percentage of dysmenorrhea occurring in a group of students who were classified as "high strung" was lower than in a control group not so classified.

Posture of Cardiopath During Pregnancy and Labor.—The principles involved in the management of the cardiopath are enumerated by Rudolph thus: (1) a thorough knowledge of the cardiorespiratory physiology as related to posture; (2) the use of every known aid in relieving the embarrassed heart of avoidable strain, and (3) to obtain the opinion of a cardiologist as to the condition of the cardiorespiratory apparatus, keeping in mind that the obstetrician on the basis of his obstetric judgment must decide when and how to intervene in a given case for the safety of the patient.

Sodium Amytal in Eclampsia.—Hamblen and Hamblin present the results of a study of six patients with eclampsia whose only sedation was received from the oral administration of sodium amytal. In all six patients the convulsions were immediately controlled. After the convulsions were controlled, sedation was maintained with relatively small doses of sodium amytal. None of the patients exhibited the depression of respiratory rate or the cyanosis which have been observed frequently in patients receiving large doses of morphine. No inhalation anesthesia was required for delivery of the patients. The babies were in good condition at delivery and did not require vigorous resuscitation. On the basis of their observations, the authors conclude that the convulsions of eclampsia can be controlled promptly and completely by the oral administration of sodium amytal without untoward effects on the mother or baby.

American Journal of Physical Therapy, Chicago

9: 1-28 (April) 1932

Elliott Treatment as Applied to Urologic Cases. C. T. Stone, New York.—p. 5.

Perfume Dermatitis: Case Report, with Review of Literature and Bibliography. H. Goodman, New York.—p. 16.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

27: 497-656 (April) 1932

*Results of Radiation Therapy in One Thousand and Twenty-Two Private Cases of Carcinoma of Breast from 1902 to 1928 (Including One Hundred and Twenty-Seven Cases in Which Radium and Roentgen Rays Were Combined). G. E. Pfahler, Philadelphia.—p. 497.

Occurrence of Roentgen Pleuropneumonitis in Treatment of Breast Cancer. R. H. Fike, Atlanta, Ga.—p. 509.

Postoperative Roentgen Therapy for Cancer of Breast: Report of One Hundred and Three Consecutive Cases. U. V. Portmann, Cleveland.—p. 513.

*Treatment of Metastatic and Inoperable Mammary Cancer, with Discussion of Certain Distinct Types of Metastasis. F. E. Adair, New York.—p. 517.

*Interstitial Use of Gold-Filtered Radon Transfixion Tubes in Treatment of Mammary Cancer. G. T. Pack, New York.—p. 532.

Interstitial Irradiation of Mammary Cancer, with Especial Reference to Measured Tissue Dosage: Supplementary Report. B. J. Lee, New York.—p. 547.

Roentgenologic and Legal Considerations of Fractures of Mandible. S. W. Donaldson, Ann Arbor, Mich.—p. 562.

*Some Unusual Pneumonias Associated with Aspiration of Fats and Oils in Lungs. J. W. Pierson, Baltimore.—p. 572.

*Osteopoikilosis (Disseminated Condensing Osteopathy). L. F. Wilcox, Detroit.—p. 580.

Mensuration of Heart and Chest in Left Postero-Anterior Oblique Position: Comparative Study: III. Correlative Measurements of Aortic Arch and Thorax. W. W. Fray, Rochester, N. Y.—p. 585.

Radiation Therapy in Carcinoma of Breast.—Pfahler's study is based on a review of 1,022 cases treated in his private clinic up to 1928. None of the patients were treated by radium alone, and only a small proportion received any radium treatment. In the author's opinion, radium is relatively more powerful for its local effects on cancer than the roentgen rays, but for deep effects or wide distribution it is of less value unless used in very large quantities and at a distance. The first course of treatment should always be as thorough and vigorous as possible, for there is no doubt that recurrences appearing after prophylactic irradiation are highly refractory to further irradiation. Since cancer of the breast is so generally a widely distributed disease, the author uses radium for intensive local effect and roentgen radiation for its wider and deeper distribution. For these reasons, he has been trying to combine the use of high voltage roentgen rays with radium according to Keynes' method in the treatment of primary carcinoma of the breast. His impressions from this combination are favorable, but his experience is too limited and too recent to be considered in any detail.

Treatment of Mammary Cancer.—Studies made by Adair of the inoperable or "hopeless" cases of cancer of the breast reveal that the metastases arrange themselves into definite class groups. The best form of treatment in these cases depends on the exact type of metastases. The axilla offers a more difficult problem in thorough irradiation than does the breast on account of the proximity to the brachial plexus and the large axillary vessels. More diffuse radiation is scattered throughout the axillary space by the use of the Pack radon wires, the platinum radon needles and the long element needles than by the use of bare tubes and gold seeds. More irradiation is required to obtain disappearance of axillary disease than supraclavicular disease. In only one type of supraclavicular metastasis is the use of bare tubes or gold seeds indicated. The clavicle will withstand one routine exposure of eight high voltage roentgen treatments. The use of chordotomy in cases of carcinomatous invasion of the brachial plexus is urged. Bulky metastasis to the parasternal site is ordinarily dissipated by the routine use of one radium pack of 15,000 millicurie hours and one high voltage roentgen treatment. The literature on this subject of metastasis into the osseous system implies the uselessness of attempting treatment. Well planned irradiation, together with the use of proper supportive apparatus, however, not only gives great relief from pain but occasionally has given months of useful life to patients who were bedridden with paralysis of the legs from pressure on the spinal cord. Properly planned irradiation as a rule will give improvement in function and symptoms in cases of metastasis into the pelvic bone.

Gold-Filtered Radon Transfixion Tubes in Treatment of Mammary Cancer.—Pack emphasizes the fact that the breast containing a cancer and the adjacent regions of lymphatic drainage must receive diffuse rather than focal interstitial irradiation. It occurred to him that the substitution of linear for point sources of radiation would afford a more accurate placement and a more diffuse distribution of interstitial irradiation. Accordingly, he collected radon in long capillary gold tubes of 0.3 mm. filter, the length being determined in each instance by the size of the breast. These hollow gold wires are sealed at their extremities. Waxed silk threads are attached on caps to these capillary tubes to permit their withdrawal after the proper time has elapsed. The flexibility and small caliber of these gold capillary tubes facilitate their introduction in the same manner as the implantation of gold radon seeds. They are placed within the trocar needles with the attached threads projecting from the hilts. The tumor, breast, axilla or tissue to be irradiated is transfixed by the needle; as the needle is withdrawn the gold capillary tube is left in place, having been extruded from the needle point by gentle pressure against the wire obturator in the trocar. The radon transfixion tubes are introduced in gridiron fashion so as to transfix the tumor and surrounding tissue in three planes, horizontally, vertically and anteroposteriorly. The tubes are of sufficient length to extend completely through and beyond the palpable margins of the tumor in order to irradiate its environment. The ends of the wires are well beneath the skin, which is perforated only by the attached silk threads. From twelve to sixteen radon tubes suffice to irradiate the average breast and the tumor which it contains. The four or six tubes inserted anteroposteriorly are short to correspond with the thickness of the breast at the site of the tumor. The transverse tubes, from four to six of which are used, are slightly shorter than the width of the breast. The tubes for vertical implantation are longer in pendulous breasts. In an average case the length of the gold radon tubes might be as follows: anteroposteriorly, 4 cm.; transversely, 6 cm.; vertically, 8 cm. In the axilla, they are inserted fanwise in order to afford diffuse and accurate irradiation of the axillary contents. The scheme for distribution of these radon tubes in the axilla calls for three tubes, each 10 cm. in length, or six tubes 6 cm. in length. They are introduced from below upward or downward from the subclavicular region, care being taken to avoid the axillary vessels and brachial plexus at the apex of the axilla. The author has used this method of irradiation in the treatment of fifteen patients with mammary cancer since August, 1930. Of these, seven had inoperable and eight had operable carcinomas of the breast. The results have been gratifying, considering the large size of the tumors selected for this treatment.

Pneumonias Associated with Aspiration of Oils in Lungs.—Pierson calls attention to the fact that fats and oils often reach the alveoli of the lungs when they are administered to children either orally or through the nasopharynx. They collect in large masses in the lungs and are associated with chronic pneumonias and fibrosis. The widespread use of oils in pediatrics offers a large potential source for this condition. The presence of fatty material in the lungs produces an interesting roentgen picture without pathognomonic signs.

Osteopoikilosis.—According to Wilcox, osteopoikilosis, or osteopathia condensans disseminata, is a condition which is relatively rare in the medical literature. It is characterized by a disseminated condensation of the bones of the skeleton without clinical symptoms. All the bones have been shown to be involved except the bones of the skull. The multiple areas of increased density vary from 2 mm. to 2 cm. in diameter and are found in the spongiosa of the epiphyses and the metaphyses of the bones. They are not found in the midportion of the diaphyses of the long bones. The condition has been observed in both males and females, and, as it occurs without symptoms, it is found by accident during a roentgen examination for some other condition. The etiology is unknown, but it is evident that there are more or less uniform disturbances in the proliferation and ossification of bone-forming cartilage during the period of development. In a search of the literature, the author was able to find seventeen cases of osteopoikilosis; to these he adds the reports of two cases that he observed.

American Journal of Syphilis, St. Louis

16: 145-288 (April) 1932

Conduct of Spirochaeta Pallida in Tissue Explantations. F. Földvari, Budapest, Hungary.—p. 145.
Life History of Treponema Pallidum: Critical Review of Literature. N. R. Ingraham, Jr., Philadelphia.—p. 155.
*Syphilitic Nephrosis. M. Bodansky and S. S. Templin, Galveston, Texas.—p. 191.
Colloidal Mercury Sulphide in Treatment of Syphilis. W. Gennerich, Kiel, Germany.—p. 198.
*Studies in Serology of Syphilis: IX. General Consideration of Precipitation Tests for Syphilis. H. Eagle, Baltimore.—p. 218.
*Eagle Flocculation Test in Serum Diagnosis of Syphilis. M. Bodansky, Galveston, Texas, with assistance of Bess Reitzel.—p. 232.
Use of Plasma in Precipitation Tests for Syphilis. K. L. Burdon, St. Louis.—p. 237.

Syphilitic Nephrosis.—Bodansky and Templin describe a case of syphilitic nephrosis in which the edema was promptly relieved by a high meat diet. The serum proteins before treatment were equivalent to an osmotic pressure of 10.94 mm. of mercury, calculated by using Govaerts' constants. Within five days on the high meat diet, it rose to 13.58 mm. Although this is approximately 26 per cent below the average normal (18.4 mm.), the change was sufficient to cause most of the edema to disappear. A serum protein content equivalent to an oncotic pressure of 21.3 mm. was obtained in a subsequent analysis. By this time the edema had completely disappeared. The last analysis recorded showed the serum proteins to have an oncotic pressure of 27.32 mm. of mercury, a normal value. During the eight months' period of observation, the basal metabolism increased from minus 38 to minus 12 per cent. This occurred without the use of thyroid.

Serodiagnosis of Syphilis.—A consideration of the mechanism of the precipitation tests for syphilis leads Eagle to the enumeration of a group of factors common to all the precipitation tests and largely determining their sensitivity and specificity. It is suggested that the precipitation technic may be improved by (1) the use of theoretically and empirically determined optimal values of these factors, (2) the discovery of new sensitizers to be used as adjuncts to cholesterol, and (3) a more extensive use of the centrifuge as an aid to aggregation.

Eagle Flocculation Test.—In a series of 3,072 consecutive cases, Bodansky found that the Eagle flocculation test possesses a high degree of accuracy and reliability. The error is probably less than 2 per cent. He believes that because of its unusual simplicity and the well defined character of the reaction, the Eagle test is likely to become a most valuable diagnostic procedure.

Archives of Internal Medicine, Chicago

49: 541-712 (April) 1932

Biologic Value, Iodine Content, Histologic, Structural and Clinical Picture of Goiter. A. Jordi, Bern, Switzerland.—p. 541.
*Granulopenia (Granulocytopenia), with Especial Reference to Classification and Benign Types. G. M. Piersol and E. Steinfield, Philadelphia.—p. 578.
*Hodgkin's Disease with Cavity Formation in Lung: Report of Case. J. S. Bouslog and W. W. Wasson, Denver.—p. 589.
*Hemangiectatic Hypertrophy and Congenital Phlebarteriectasis, with Particular Reference to Diagnostic Importance of Peripheral Vascular Phenomena. H. L. Blumgart and A. C. Ernstene, Boston.—p. 599.
*The Man-Environment Unit and Peptic Ulcer. G. Draper and Grace Allen Touraine, New York.—p. 616.
*Effect of Ligation of Parotid Duct on Carbohydrate Metabolism of Totally Depancreatized Dogs. L. M. Zimmerman and S. Soskin, Chicago.—p. 663.
Subacute Bacterial Endocarditis Due to Staphylococcus Albus: Report of Case. B. Stich, New York.—p. 666.
*Chorea Gravidarum: Statistical Study of Nine Hundred and Fifty-One Collected Cases, Eight Hundred and Forty-Six from the Literature and One Hundred and Five Previously Unreported. P. Willson and A. A. Preece, Washington, D. C.—p. 671.
*Association of Infectious Asthma and Arthritis from Point of View of Bacterial Allergy. J. Harkavy and S. Hebald, New York.—p. 698.

Granulopenia.—Piersol and Steinfield state that, so far as one may apply observations made on laboratory animals and on patients suffering from benign forms of granulopenia to the more severe fatal forms, it seems possible that the mechanism is similar in all. Varying degrees of severity may depend on the duration or the potency of the harmful agent and the constitutional make-up of the individual. Sudden removal of older leukocytes is followed by attempts to replace these by younger forms in a more or less orderly fashion in mild cases. In severe cases there is apparently an abeyance of granulopoiesis, or there may be disorderly distribution with a throwing out of still more immature forms. In the latter instances, it would appear that the hypothetic chemotactic factor is active while the maturation factor is absent. Clinically, the authors have seen both of these reactions following arsphenamine therapy; in one, there was produced a granulopenic picture; in the other, a blood picture indistinguishable from myeloblastic leukemia. In regard to their own experiments, they can only state that a long-continued granulopenia could not be induced in healthy rabbits by the use of a small group of common bacteria in the form of suspension filtrates or inactivated supernatant fluids. The assumption of a probable altered state of reactivity (from an immunologic point of view) as a factor in these disturbances was not borne out by these results. This, of course, does not dispose of the obscure conditions conveyed by the terms idiosyncrasy or constitutional susceptibility. The positive results in the production of short periods of granulopenia with intravenous injections of peptone and other substances followed by the characteristic influx of young forms on recovery are of interest mainly in their resemblance to milder forms of granulopenia.

Hodgkin's Disease.—Bouslog and Wasson report a case of lymphogranuloma of the mediastinal type, which in its later stages closely resembled tuberculosis. It was exceptional in that there developed a true cavity in the lung, which also proved to be lymphogranulomatous when the case came to necropsy. The authors have been unable to find a similar case reported in the literature.

Hemangiectatic Hypertrophy and Congenital Phlebarteriectasis.—A case of hemangiectatic hypertrophy and congenital phlebarteriectasis was studied clinically by Blumgart and Ernstene. Criteria for the diagnosis of the condition were established. The left arm was conspicuously larger than the right; the blood flow through the left upper extremity was considerably increased, but the volume output of blood per minute from the heart and the velocity of blood flow through the lungs were normal. The velocity of blood flow in the left arm was far greater than that in the right arm. The so-called diagnostic signs of arteriovenous aneurysm are not diagnostic of arteriovenous aneurysm but are rather to be regarded as signs of free arteriovenous communication; the exact nature and site of the communication must be determined by further study. The following signs may be regarded as manifestations of free artery to vein communication; they do not denote whether the artery and vein communicate by direct anastomosis or by intermediate vascular plexuses: (1) increase in pulse pressure in the affected part due to elevation in the systolic and reduction in the diastolic blood pressure; (2) lowering of the general diastolic arterial pressure of the body; (3) increase in venous pressure in the affected veins and their tributaries without the general venous pressure of the body necessarily being affected; (4) capillary pulsation; (5) raised ventricular rate; (6) normal or increased output of blood from the heart; (7) normal or increased size of the heart; (8) abnormally high oxygen content of the venous blood of the affected part; (9) elevation in the temperature of the skin of the region in which the abnormal communication is situated, and (10) thrills and murmurs over the site of the abnormal communication and over the arteries leading to the lesion. If after an artery is occluded the ventricular rate slows, the general diastolic blood pressure of the body rises, a lessening of venous engorgement of the affected part occurs, and the peripheral murmurs and thrills disappear, the abnormal artery to vein leakage lies in the segment of artery compressed or in its peripheral continuation. The signs of multiple free communications characteristic of hemangiectatic hypertrophy and congenital phlebarteriectasis that distinguish this condition from the direct anastomosis of arteriovenous aneurysm are as follows: 1. There are usually several or numerous dilated arteries leading to the site of phlebarteriectasis; there is generally but one dilated arterial trunk leading to an arteriovenous aneurysm. 2. Systolic venous pulsations are transmitted away from the periphery in congenital phlebarteriectasis; they are transmitted toward the periphery as well as centrally in arteriovenous aneurysm. 3. Increased growth of the region in which the abnormal communications are situated favors the diagnosis of phlebarteriectasis rather than arteriovenous aneurysm.

The Man-Environment Unit and Peptic Ulcer.—According to Draper and Touraine, the ulcer race families seem to produce a preponderance of males, and these males are of the long thin type. Furthermore, not only in their morphology, but also in their psychologic make-up, they display a well marked emphasis on the feminine component of the androgynous mosaic. Fear is clearly an important factor in the digestive disturbance of the gastric ulcer race. It would seem that the peptic ulcer race was composed of persons of definite constitutional type. These people possess qualities of soma and psyche which can be easily recognized. When the healthy balance of the "man-environment unit" is disturbed, symptoms in the domain of the sympathetic nervous system and gastro-intestinal tract develop. The "man-environment unit" disturbance can often be corrected permanently by the use of appropriate psychotherapeutic methods. Analytic psychology at present seems to offer the best attitude of approach.

Ligation of Parotid Duct.—Zimmerman and Soskin report that ligation of the parotid ducts does not exert a demonstrable effect on the carbohydrate metabolism of totally depancreatized dogs. The factor that is responsible for the increased dextrose tolerance following ligation of the parotid ducts in normal animals, therefore, probably does not have a direct insulin-like action but rather operates through the pancreas as an activating or stimulating agent.

Chorea Gravidarum.—Willson and Preece present a statistical study of chorea gravidarum based on an analysis of the available data of 951 choreic pregnancies occurring in 797 persons, much the largest collection of cases thus far assembled. One case was personally observed by them, and the remainder were collected from the literature or through the medium of a questionnaire sent to more than 500 American obstetricians. Their study led them to the definite conclusion that the chorea occurring during pregnancy is identically the same disease as Sydenham's chorea in adolescents, modified slightly, in certain respects, by its association with pregnancy. The prognosis is much less grave than has heretofore been believed and seems to be improving, as the mortality rate of 12.7 per cent since 1900 is half of that obtaining prior to 1880. The best treatment for the chorea theoretically and from the standpoint of results obtained consists of "rest, seclusion, careful feeding and gentle discipline" (Wall and Andrews). Nerve sedatives and morphine may be used, but sparingly and with great discretion. In mild cases there is undoubtedly no reason for therapeutic abortion. In severe cases the statistical evidence fails to show better results with intervention than without; in fact, the reverse is true. If resorted to at all, intervention should be by the induction of premature labor or abortion and, except in rare instances, not by immediate operative delivery, as the mortality in these procedures is about 50 per cent. Its most likely indication would seem to be in the case in which the patient is getting progressively worse, despite treatment, but before fever, leukocytosis, and so on, give evidence of active and generalized infection; under the latter circumstances, it apparently does nothing but hasten the fatal outcome.

Asthma and Arthritis.—In a study of bronchial asthma due to hypersensitiveness to infection, Harkavy and Hebald observed nine cases in which attacks of arthritis developed. The arthritis was migratory, affecting various small and large joints, and was accompanied by redness, swelling and pain on motion, but practically no fever. The duration of arthritis varied from two to four years, whereas that of asthma was from six to fifty years. In five of the patients, foci of infection in sinuses and lungs constituted the only etiologic factors of the asthma and joint manifestations. In four, besides infection there was a coexistent atopic hypersensitiveness to substances such as ragweed and goose feathers. Simple elimination of these atopens had no influence on either the asthma or the arthritis. Evacuation of pus from antrums, treatment of ethmoids and the consequent recession of the pulmonary focus caused complete subsidence of the arthritis in eight of the nine cases, while the asthmatic seizures diminished in frequency and severity in each instance. A consideration of recent accumulating evidence of bacterial allergy accompanying infectious conditions such as scarlet fever, rheumatic fever and its arthritis, and tuberculosis, leads the authors to the conclusion that the allergic state is part of the immunologic mechanism accompanying infection. In asthma induced by a chronic focus of infection, bacterial allergy is an admittedly accepted mechanism. Coexistent arthritis due to the same focus is in all probability an expression of a similar reaction in allergic persons in whom the lungs are the primary and the joints the secondary shock tissues.

Archives of Ophthalmology, Chicago

7: 499-660 (April) 1932

*Detachment of Retina and Its Surgical Therapy: Experimental Study. L. L. Mayer, Chicago.—p. 499.
*Angiomatosis Retinae with Cerebellar Cyst (Lindau's Disease). W. S. Atkinson, Watertown, N. Y.—p. 510.
Fundamentals of Dynamic Retinoscopy. J. I. Pascal, Boston.—p. 515.
Pathology of Melanosis and Benign Melanomas of Ciliary Body. B. Alexander, Montreal, Canada.—p. 521.
Circulation of Aqueous: I. Rate of Flow. J. S. Friedenwald and H. F. Pierce, Baltimore.—p. 538.
Problem of Late Afternoon Lighting. C. E. Ferree and G. Rand, Baltimore.—p. 558.
Size and Shape of Ocular Images: I. Methods of Determination and Physiologic Significance. A. Ames, Jr., G. H. Gliddon and K. N. Ogle, Hanover, N. H.—p. 576.
Chemical Constitution of Sclera. A. C. Krause, Baltimore.—p. 598.

Detachment of Retina.—Mayer describes experiments on rabbits from which it would seem rational to make the deduction that the retinal tear or hole is not the entire factor in maintaining a detached retina. Although reattachment occurs when the cautery is used, there is marked destruction of tissue in the vicinity of the operative wound. Permanent experimental detachment of the retina has not been produced, and further progress in a study of this kind must await such a procedure. Methods that do not cause this extensive destruction but at the same time produce an exudate that seals the retina to the choroid would seem to be those of preference.

Lindau's Disease.—Atkinson reports a case of Lindau's disease in a man, aged 32. In the sex and age of the patient, this case corresponded with the others reported. An enormous vein with the angiomatous tumor mass in the periphery, white patches of exudate in the retina and an enlarged artery with aneurysms presented a rather typical picture of angiomatosis retinae, often referred to as von Hippel's disease. This, together with a cerebellar cyst and angiomatous areas in the cyst wall, seems sufficient to classify the case as Lindau's disease. That no other members of the patient's family were found to have the disease does not preclude this diagnosis. This adds a second case of Lindau's disease in which the histologic diagnosis of the cerebellar lesion has been verified during the life of the patient.

Archives of Otolaryngology, Chicago

15: 503-670 (April) 1932

*Electrosurgery and the Otolaryngologist, Including Gradual Extirpation of Tonsils by Electrocoagulation and Diathermocryptectomy. F. B. Balmer, Chicago.—p. 503.
Relationship Between Status Lymphaticus, Thymus and Suprarenal Glands. E. H. Campbell, Philadelphia.—p. 517.
*Nasal Polypi Associated with Unsuspected Malignant Growth: Report of Case. N. E. Lacy, Kansas City, Mo.—p. 530.
*Laryngeal Vertigo: Its Relation to Cataplexy. J. G. Wilson, Chicago. —p. 534.
*Specific Prophylaxis of Pneumococcus and Streptococcus Meningitis: II. Vaccine Prophylaxis. J. A. Kolmer and K. W. Amano, Philadelphia.—p. 547.
Tuning Fork Exciter and Sources of Error in Tests of Hearing. R. M. Moose, San Bernardino, Calif.—p. 557.
*Ultimate Fate of Bone When Transplanted into Nose for Purpose of Correcting a Deformity. W. W. Carter, New York.—p. 563.
Clinical Importance of Mastoid Antrum. G. E. Tremble, Montreal, Canada.—p. 574.
Apparent Effects of Cerebral Tumor on Auditory Acuity: Report of Case. L. J. Lawson, Evanston, Ill.—p. 583.
*Pathologic Changes in Ear in Niemann-Pick's Disease. J. G. Druss, New York.—p. 592.
*Pathologic Changes in Tonsils: Their Relation to Usual Indications for Tonsillectomy. P. S. Rhoads, Chicago.—p. 599.
Chloroma: Its Relation to Otolaryngology. R. Levy and H. I. Laff, Denver.—p. 610.
Progress in Otolaryngology: Summary of Bibliographic Material Available in Field of Otolaryngology: Tumors of Nose and Throat. G. B. New and W. Kirch, Rochester, Minn.—p. 623.

Electrosurgery.—Balmer considers that electrosurgery is a valuable and indispensable aid to classic surgery. A thorough knowledge of the various electrical currents and their application is absolutely prerequisite for the proper and safe employment of electrosurgery. The therapeutic action of the various currents is very selective as well as being attended with an abundance of precision and flexibility. In certain fields of surgery, electrosurgery has replaced the scalpel, and it bids fair to continue to do so. Electrocoagulation does not replace surgery in the removal of the tonsils; however, it is better suited in certain selected cases. It is the method *par excellence* for the removal of postoperative tonsillar tissue and adhesions, lingual hypertrophy and varix and for the extirpation of the tonsils in the presence of certain diseases. There is at present no ideal method for the removal of the tonsils under all circumstances. The combination of surgery and electrosurgery is a means of approaching this ideal. The status of the orthodox surgical tonsillectomy is more secure since the advent of electrosurgery, owing to the fact that the postoperative difficulties that are so frequent can usually be remedied with this newer procedure with a minimum of inconvenience, morbidity and mortality to the patient. Nothing short of total removal of the tonsils should be considered when they are diseased and their removal is indicated, with the exception that diathermocryptectomy may be considered under special circumstances when a more conservative procedure is imperative. Electrocoagulation has many contraindications and limitations. The surgeon should be equipped to use the method best suited to the conditions at hand and should not be limited by lack of knowledge, ability or equipment, or by prejudice. The noticeable improvement following two or three treatments with electrocoagulation is probably due to the sterilizing effect of the current on the diseased tonsil tissue. The coagulated tissue remaining in situ probably acts similarly to an autogenous vaccine, causing a defense reaction to ensue.

Nasal Polypi with Malignant Growth.—Lacy calls attention to the fact that nasal polypi are associated with malignant growths frequently enough to oblige the rhinologist to consider this possibility in every case of nasal polypi that he encounters. The author reports a case which bears out the theory that a nasal polypus is not transformed into a malignant tumor but is a result of a primary malignant process in the mucous membrane. It is particularly important that the tissue surrounding the attachment of the polypus should be carefully examined as well as that all the polypi be removed. The examination of one of a large number of polypi that have been removed does not constitute a pathologic examination. The amount of radium required cannot be determined without a pathologist's report of the tissue removed.

Laryngeal Vertigo.—According to Wilson, laryngeal vertigo is a sequence of abnormal motor responses produced reflexly from the larynx and its associated respiratory mechanism, by closure of the larynx under conditions not yet understood. The essential phenomena are a sudden fall to the ground and a speedy and complete recovery, with or without loss of consciousness. Frequently superadded clinical phenomena are observed, traceable to a more prolonged closure of the larynx with increase of intrapulmonary pressure. Neither those cases in which consciousness is retained nor those in which syncope occurs are to be regarded as distinct but as due to the same laryngeal closure and reflex. Reasons are given why laryngeal vertigo and cataplexy are to be regarded as related clinical entities presenting at times characteristics that differentiate the one from the other. The author suggests reflex inhibition of tonus from laryngeal closure and arrest of respiration.

Specific Prophylaxis of Pneumococcus and Streptococcus Meningitis.—Kolmer and Amano state that it is possible to raise the resistance of rabbits to meningeal infection with virulent pneumococci and streptococci by preliminary immunization with autogenous vaccines. They observed especially encouraging results among rabbits vaccinated with type I pneumococcus and later inoculated intratympanally with the same strain. With types II and III pneumococci and Streptococcus hemolyticus vaccines, the effects of immunization were less apparent when the animals were later inoculated intracisternally with virulent cultures producing fulminating meningitis among the controls. The intracutaneous injection of pneumococcus and streptococcus vaccines appeared to produce a higher degree of immunity than subcutaneous injections. The oral administration of pneumococcus vaccines sometimes resulted in producing a high degree of resistance to meningeal infection. The authors recommend that, when time permits, careful bacteriologic examination of the secretions be made in chronic sinus and otitic infections, especially ethmoiditis, and that in pneumococcus and streptococcus infections autogenous vaccines be administered preliminary to operative procedures to raise immunologic resistance when meningitis is feared as a possible complication.

Ultimate Fate of Bone Transplants.—Carter draws the following conclusions from his many years of clinical experience in the use of autogenous bone transplants: 1. Bone may be successfully transplanted from one part of the body to another. The rib, with its outer layer of periosteum, is available and is best suited for supplying this tissue. The gap remaining after the removal of a segment is filled with new bone two months after the operation. 2. If aseptic conditions are preserved and the transplant is left in contact with live bone, it will establish osseous connection with this bone and will continue to live and grow, its growth being regulated by the functional demands of the part. 3. Bone, properly transplanted, is not absorbed. 4. Should infection occur and this be eliminated by proper measures, without the loss of the transplant, at least a portion of the latter is certain to become necrotic. The necrotic area, however, will be filled in with new bone by a process of creeping substitution brought about by the activity of the specific osteogenic cells remaining in the live portion of the transplant and in the live bone with which it is in close contact. 5. Close inspection of some of the author's cases of many years' standing shows that, in the correction of nasal deformities, autogenous implants of bone and cartilage may be relied on to secure permanent results.

Niemann-Pick's Disease.—The pathologic changes in the ear in a case of Niemann-Pick's disease are described by Druss. Large foam cells were found in the submucosa of the tympanum and antrum, in the bone marrow and perivascular spaces of the temporal bone, and about the nerve trunks in the internal auditory meatus and in the purulent exudate of the middle ear. Reasons are given for the belief that these cells are of the lipoid histocytosis type. Degenerative changes were also found in the ganglion cells of the seventh and eighth nerves.

Pathologic Changes in Tonsils.—Rhoads believes that in many cases simple inspection reveals sufficient evidence for the removal of tonsils. In most cases, however, it is of little importance as compared with the evidence adduced by a careful history, ordinary laboratory examinations and a painstaking physical examination. Team work by the internist and the otolaryngologist is required. If the general examination reveals a systemic disease that is usually associated with focal infection, and other more obvious foci are not discovered, the tonsils should be regarded as probable sources of infection regardless of their external appearance.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

13: 197-253 (April) 1932

Studies in Application of Heat to Female Pelvis. G. D. Royston, F. H. Ewerhardt and M. A. Roblee, St. Louis.—p. 197.
Aids for the Hard of Hearing. H. Newhart, Minneapolis.—p. 202.
Diathermy as Aid in Treatment of Gonorrheal Endocervicitis. A. G. Fleischman, Des Moines, Iowa.—p. 207.
Recent Advances in Heliotherapy as Applied in Pulmonary Diseases. A. M. Forster, Colorado Springs, Colo.—p. 214.
Physical Therapy and Traumatic Surgery. J. E. M. Thomson, Lincoln, Neb.—p. 216.
Electrothermic Treatment of Accessible Malignant Growths: W. H. Schmidt, Philadelphia.—p. 219.
Plea for Better Understanding of Colon Mechanics. F. H. Morse, Boston.—p. 225.
Physical Therapy Office Measures Helpful in Iritis. E. G. Linn, Des Moines, Iowa.—p. 230.

Colorado Medicine, Denver

29: 145-184 (April) 1932

Cardiac Asthma. L. E. Viko, Salt Lake City.—p. 149.
Present Trends in Tuberculosis. C. E. Harris, Woodmen.—p. 155.
Geriatrics. C. O. Giese, Colorado Springs.—p. 159.
Head Injuries. W. D. Abbott, Des Moines, Iowa.—p. 163.
Respective Indications of Cholecystostomy and Cholecystectomy. Aime Paul Heineck, Chicago.—p. 166.

Delaware State Medical Journal, Wilmington

4: 77-98 (April) 1932

Hemorrhage in Early Pregnancy. J. M. H. Rowland, Baltimore.—p. 77.
New Method of Performing the Radical Cesarean Operation. W. Wertenbaker, Wilmington.—p. 83.
Social Insurance. E. H. Ochsner, Chicago.—p. 87.

Florida Medical Association Journal, Jacksonville

18: 451-492 (April) 1932

Cardiac Diseases and Their Relation to Occupation. T. Z. Cason, Jacksonville.—p. 459.
Partial Statistical Study of Three Hundred and Sixty-Five Cases of Appendicitis. J. S. Turberville, Century.—p. 462.
Otologic Immunity. C. J. Heinberg, Pensacola.—p. 468.
Estimated Average of at Least Twenty Per Cent Hookworm Disease in Ninety-Eight Southern Schools. C. W. Stiles, Winter Park, and B. J. Collins, Washington, D. C.—p. 471.

Indiana State Medical Assn. Journal, Fort Wayne

25: 157-204 (April) 1932

Distribution of Physicians in Indiana. T. B. Rice, Indianapolis.—p. 157.
*Aspiration of Joints. E. B. Mumford, Indianapolis.—p. 162.
Kidney Function Tests. A. F. Weyerbacher, Indianapolis.—p. 165.
Embryology, Congenital Anomalies, Anatomy and Histology of Kidneys. W. N. Wishard, Jr., Indianapolis.—p. 168.
Classification and Etiology of Nephritis. G. S. Bond, Indianapolis. —p. 171.
Modern Theory of Urinary Secretion. H. O. Mertz, Indianapolis.—p. 172.

Aspiration of Joints.—Mumford considers that aspiration of a joint is a safe surgical procedure when done under careful aseptic conditions. It is therefore a line of treatment that can be done by the general practitioner. Effusions into joints that form rapidly after trauma even of a trivial type are bloody in character and should be aspirated at an early date. Blood is absorbed slowly from joints. The precipitated fibrin leads through irritation to marked and serious changes within the joint cavity, requiring major operations for relief. Many of the late joint changes that give rise to considerable impairment can be prevented by early aspiration of the original bloody fluid. Since the traumatic joint is usually first seen by the general practitioner, he should recognize the importance of early aspiration.

Iowa State Medical Society Journal, Des Moines

22: 205-242 (May) 1932

A Surgical Clinic. C. J. Rowan, Iowa City.—p. 205.
Nasal and Oral Hemorrhage Associated with Purpura Hemorrhagica. Clare V. Lawton, Grinnell.—p. 210.
The Rising Mortality from Appendicitis. A. Kolodny, Sioux City. —p. 212.
Cancer and Hydrochloric Acid: Preliminary Report. C. R. Harken, Osceola.—p. 215.
*Enterostomy as Life-Saving Measure. W. W. Bowen, Fort Dodge. —p. 216.
Claude Bernard's Theory and Reversible Coagulation Reactions of Proteins. A. W. Swensen, Waverly.—p. 219.
Subacute Combined Degeneration of Spinal Cord Affecting Twins. F. P. Moersch, Rochester, and T. J. Pfeffer, DeWitt.—p. 221.
Spontaneous Subarachnoid Hemorrhage in Childhood. J. E. Dyson, Des Moines.—p. 223.

Enterostomy as Life-Saving Measure.—According to Bowen, enterostomy has a great field of usefulness. He uses it in all suppurating conditions in the abdomen when there is actual or threatened peritonitis; in all cases of ruptured duodenal ulcer, ruptured gallbladder, septic appendix, or pelvic infection, when he also finds evidence of peritonitis, distended intestine, or an inflamed, angry-looking intestine; also he uses enterostomy as a preliminary procedure when there is a malignant tumor to be removed later. An enterostomy does a good many things that nothing else will do. First, it rapidly drains out any toxins that may be in the intestine. Second, it allows fluids and gases in the intestine to escape and so prevents distention or reduces any distention that may be present. Third, it allows the intestine distal to the enterostomy to rest, so that, if peritonitis has begun, the rest permits recovery if it is not too far advanced, and, if peritonitis has not begun, there is little chance for it to start. Fourth, it allows the immediate giving of water. There is an exit for gas and for fluids and usually the patients do not vomit from taking water. Fifth, it allows the immediate pouring of liquids into the intestine at the place where absorption is most active; namely, the jejunum.

Journal of Immunology, Baltimore

22: 245-314 (April) 1932

Electric Charge of Bacterial Antigens. L. Olitzki, Jerusalem, Syria, Turkey.—p. 251.
Antigenic Analysis of Variants of B. Paradysenteriae and Serologic Relation of One Variant to B. Morgani. G. M. Mackenzie and Louise N. Batt, Cooperstown, N. Y.—p. 257.
*Variations in Encephalitogenic Power of Vaccinia Virus. R. Thompson and L. Buchbinder, New York.—p. 267.
*Studies of Diseases of Lymphoid and Myeloid Tissues: IV. Skin Reactions to Human and Avian Tuberculin. F. Parker, Jr., H. Jackson, Jr., G. F. Hugh and T. D. Spies, Boston.—p. 277.
Bacterial Endotoxin: Search for a Specific Intracellular Toxin in S. Pullorum. J. H. Hanks and L. F. Rettger, New Haven, Conn.—p. 283.

Variations in Encephalitogenic Power of Vaccina Virus.—Thompson and Buchbinder describe experiments on animals in which they demonstrated that the presence or absence of the encephalitogenic property in various strains of vaccinia virus cannot be ascribed to heterogenic origin, since derivants of the same parent strain differ in this respect. Variations in the character of the skin lesions produced by neurotropic and dermotropic viruses are apparently associated with the presence or absence of the ability to produce encephalitis. The encephalitogenic strains are not obviously contaminated with herpes virus, since recovery from neurovaccinial infection affords as little immunity to herpes virus as does recovery from dermovaccinial infection. The power of neurotropic strains to produce encephalitis is not referable to contamination with the virus of poliomyelitis, since the latter virus does not cause a nonencephalitogenic vaccinia strain to become encephalitogenic for rabbits. Evidence is present which indicates that the neurotropic vaccinia strains are not contaminated by some unknown virus capable of producing encephalitis alone or when aided by a vaccinial infection. The encephalitis producing power of certain vaccinia strains is probably a property of the vaccinia virus itself. The authors suggest that the presence or absence of this property may be due to a process similar to the process of dissociation in bacterial cultures.

Studies of Diseases of Lymphoid and Myeloid Tissues.—Tuberculin tests in which use was made of both human and avian tuberculin were carried out by Parker and his associates on patients with Hodgkin's disease, malignant lymphoma, leukemia, pernicious anemia and malignant tumors. Similar tests were done on tuberculous and normal individuals. Fewer positive reactions were obtained in the patients with the diseases of the lymphoid and myeloid tissues and with malignant disease as compared with the normal persons and the tuberculous patients. More positive reactions to avian tuberculin than to human were found except in the normal group.

Journal of Industrial Hygiene, Boston

14: 113-158 (April) 1932

Contribution to Methods Used for Rapid Determination of Dust in Air. C. Naeslund, Uppsala, Sweden.—p. 113.
Procedure for Establishing Optimum Air Conditions for Light and Heavy Work. G. D. Arnaoutow and E. W. Weller, Moscow, Russia.—p. 117.
Cadmium Poisoning: I. History of Cadmium Poisoning and Uses of Cadmium. L. Prodan, Boston.—p. 132.

Journal of Urology, Baltimore

27: 371-506 (April) 1932

*Pathologic Changes in Pyelitis of Children Interpreted on Basis of Experimental Lesions. R. L. J. Kennedy, Rochester, Minn.—p. 371.
*Surgical Treatment of Nephritis. I. Simons, New York.—p. 399.
Renal Anomalies: Case Reports. J. A. H. Magoun, Toledo, Ohio.—p. 435.
*Horseshoe Kidney: Report of Five Cases. J. A. Lazarus, New York.—p. 471.
Congenital Urinary Obstructions in Male Children: Reports of Cases Presenting Unusual Anomalies. W. A. Frontz, Baltimore.—p. 489.
*Simple Technic for Prostatic Resection. R. E. Tyvand and H. C. Bumpus, Jr., Rochester, Minn.—p. 503.
*Diverticuleve. H. W. Howard, Portland, Ore.—p. 505.

Pathologic Changes in Pyelitis of Children.—*Reports* of four cases of pyelitis in which death occurred unusually early after the infection are presented by Kennedy, together with histologic studies. All were instances of infection of the urinary tract by colon bacilli solely, and without accompanying obstruction. There was an acute, widespread, suppurative process involving the renal and peripelvic tissues. In these cases of several days' to three weeks' duration there was definite pyelitis and peripelvic inflammation in every instance, and abscesses and diffuse infiltration of the parenchyma. These lesions showed a tendency to heal promptly. It is doubtful whether it will be possible to obtain specimens at necropsy in cases of pyelitis of shorter duration than these; therefore it is unlikely that examination of material from human beings will help in determination of the mode of infection. Hematogenous and ascending lesions, with and without obstruction, were produced experimentally and studied in detail. The hematogenous lesions were found to occur first in the cortex and medulla, and the ascending lesions were found to occur first in the pelvis and peripelvic tissues. In both types of infection, the process spread rapidly to the entire kidney, so that, after from forty-eight to seventy-two hours, it may be impossible to tell how the lesions were produced. Obstruction did not favor localization in the kidney of organisms injected intravenously. The process of healing begins early, as it does in the human being, and proceeds rapidly, with ultimate formation of fibrous tissue. The author emphasizes that, in every instance both in human beings and in experimental animals in which early lesions occurred, the pelvis participated in the process.

Surgical Treatment of Nephritis.—Simons considers that surgery in acute and chronic Bright's disease is indicated in selected cases in which one or more of the following symptoms or signs are in the foreground: (1) severe renal pain; (2) massive renal hemorrhage; (3) the oliguria-anuria-uremia complex, and (4) the preceding associated with anasarca. Careful complete urologic study is necessary in order to eliminate such conditions as hemorrhage with tuberculous kidney, calculous anuria, neoplasm of the kidney or its pelvis and other conditions which are not true manifestations of Bright's disease. The author includes several other conditions in his discussion which, while not bona fide Bright's disease, are of hematogenous pathogenesis though pyogenic; they are analogous and are best considered in this group. Most of the cases that are to be considered as surgical fall into the groups known as (1) acute diffuse glomerulonephritis, (2) chronic diffuse glomerulonephritis, (3) the kidney of pregnancy and eclampsia, (4) necrotic nephroses (metallic poisons, and so on), (5) lipoid nephroses, (6) embolic purulent nephritis, and (7) focal and unilateral nephritis. Semisurgical procedures, such as lavage of the renal pelves, have a place. The operations of renal decapsulation, nephropexy, nephrotomy and nephrectomy are indicated in selected cases.

Horseshoe Kidney.—According to Lazarus, horseshoe kidney is not a rare anomaly, occurring in about 0.1 per cent of normal persons. Horseshoe kidneys are relatively more prone to pathologic lesions than are normally formed kidneys. There are no symptoms characteristic of horseshoe kidney. When symptoms occur, they are due to some associated pathologic lesion. Most cases of horseshoe kidney have been diagnosed at the time of operation or at postmortem examination. A careful study of a good flat kidney roentgenogram will usually suffice to lead to the suspicion of this anomaly by showing the proximity of the renal silhouette to the vertebral column, by the obliteration of the psoas margins in part or in their entirety, and by the failure to visualize one or the other of the renal poles. Pyelography clinches the diagnosis of horseshoe kidney by showing the bizarre pelves and calices usually pointing anteriorly and approximated to the midline and shortening of ureters. The best treatment for an extensive suppurative lesion, tumor or tuberculosis involving one half of a horseshoe kidney is heminephrectomy. All other diseases involving horseshoe kidneys are treated in exactly the same manner as are similar diseases in normally formed kidneys. The diagnosis of horseshoe kidney prior to operation will greatly facilitate operative procedures on such kidneys.

Simple Technic for Prostatic Resection.—Tyvand and Bumpus describe an instrument for transurethral resection of the prostate, which is simple in construction, easy of application and in their hands has proved efficient in a considerable series of cases. It consists of a Braasch cystoscope, number 28 French, in which a fenestra has been made large enough to engage tissue to the amount of approximately 1 Gm. The instrument is open at the distal end, and the entire neck of the bladder can be observed before the obstructing tissue is engaged in the fenestra and hence the operation is carried on under full vision.

After the tissue to be excised is engaged, the needle electrode is thrust into the base of the portion of the gland to be removed, entering at exactly the place where the circumference of the tubular knife will cut. The current is allowed to flow for a few seconds, as the object is not to coagulate the engaged tissue completely but simply to seal the vessels entering it. The electrode is then removed and the tubular knife is used to excise the tissue. The procedure can be repeated as often as is needed to remove the obstructing tissue. The instrument is equipped with a catheterizing guide, which closes the fenestra and converts it into a direct cystoscope, so that at the end of the operation the entire field of procedure may be examined and if any bleeding points persist these may be coagulated with an electrode passed through the catheter guide.

Diverticuleve.—The diverticuleve described by Howard consists of a modified Kelly uterine tenaculum, which in the removal of bladder diverticula provides the mechanism of the left or inside hand and, occupying little space, permits free access to the site of operation. To the lower jaw of the instrument has been added a metal plaque of the size and shape of the palmar surface of the distal phalanx of the index finger. It is given a curve in conformity with that of the tenaculum and its surface is roughened. When the jaws of the instrument are applied to the neck of the sac, it can be lifted on the appendage and held so while the superjacent bladder wall is separated from it by sponge or dissector. The completion of removal of the sac merely consists of a repetition of the maneuver, an amount somewhat in excess of the size of the appendage being separable with each change of the instrument. In order to speed up removal of the larger sacs, it has been found advantageous to have an enlarged instrument—one with somewhat broader jaws and broader and longer appendage. The author has removed diverticula of varying sizes from five patients with the aid of this instrument. From his experience he believes that all diverticula of the bladder can be removed without the necessity of going outside the bladder wall or of packing the sac.

Maine Medical Journal, Portland

23: 67-92 (April) 1932

Treatment of Cancer in Woman by Radium. A. P. Leighton, Jr., Portland.—p. 73.
Progress in Spinal Anesthesia. W. E. Tobie, Portland.—p. 78.
*Use of Maggots in Treatment of Wounds. E. S. Hall, Portland.—p. 80.
Oscillometry in Study of Circulatory Disturbances of Lower Extremities. J. R. Hamel, Portland.—p. 85.
State Bureau of Health: Division of Communicable Diseases. Margaret Herrick, Augusta.—p. 87.

Use of Maggots in Treatment of Wounds.—Hall treats the ordinary case of osteomyelitis in the following manner: The part is washed thoroughly with sterile water, the bone is exposed and all the diseased material is removed, the marrow cavity being widely opened. The wound is then packed with sterile gauze and left for from twenty-four to forty-eight hours or until all bleeding has stopped. Maggots are then placed into the wound and the wound is covered with a wire cage. It is necessary to have this cage fit well, for if it does not the maggots are bound to escape and the patient frequently objects, mainly because they tickle when they walk on normal skin. The cage is made by sewing fine brass screen to strips of half inch sponge rubber, which are made to fit the edges of the wound exactly. The cage is applied to the wound by folding adhesive tape so that there is a sticky side to the edge of the wound and a sticky side for the rubber to be attached to. After the cage is in place, it is strapped down along its edges with other strips of adhesive tape so that it is firmly applied and there is no opportunity for the maggots to escape. After the cage is applied, an ordinary electric light is placed over it in order that the maggots may be kept warm and also to drive them deeper into the wound. Maggots always seek the shade and hence get as far from the light as possible. The maggots remain in the wound for five days and are then washed out with sterile water and a new lot inserted. A number of difficulties have arisen in treating cases. Among them has been the putting of too many maggots into a wound, with the result that in their search for food they appeared to irritate normal tissue. In all the author's cases in which this has happened, the condition has been corrected by removing some of the maggots. In some adults, particularly those of nervous disposition, it was found best to give them a rest period of from twenty-four to forty-eight hours between each application of maggots. By so doing, many patients continued with the treatment who otherwise would have refused treatment with maggots. Another difficulty that was overcome rather easily was in the treatment of osteomyelitis of the distal phalanx of a finger. Because of the small amount of dead material available, it was found that only a few maggots could be used and that at the end of a few hours they would have eaten all the material available. Consequently, a new batch of maggots was inserted each morning and by so doing a normal finger resulted. Many other conditions were treated with maggots with exceptionally good results, including two cases of varicose ulcers, one case of carbuncle, one case of an infected hand (with no bone involvement), two bad bed sores, and one case of a large sloughing cancer of the skin. Rapid cures resulted in most of the cases except the cancer, and that was helped materially, in that the offensive odor was eliminated by the maggots.

New England Journal of Medicine, Boston

206: 827-874 (April 21) 1932

*Meckel's Diverticulum in Children: Clinical and Pathologic Study: Report of Thirty-Two Cases. W. W. Hudson, Jr., and L. H. Koplik, Boston.—p. 827.
*Cancer of Cervix in Nulliparous Women: Report of Three Cases. L. E. Phaneuf, Boston.—p. 840.
Biliary Drainage as Diagnostic Agent. S. A. Wilkinson, Boston.—p. 843.
Progress in Dermatology. H. P. Towle and J. L. Grund, Boston.—p. 845.

Meckel's Diverticulum in Children.—Hudson and Koplik report thirty-two cases of Meckel's diverticulum. Twenty-six children presented symptoms referable to the diverticulum and of these seventeen (63 per cent) showed hemorrhage from the bowel, with or without other signs. In seven cases, hemorrhage was the main feature. These are summarized. When blood is present in the stool, it may or may not be mixed with the stool and may be bright red or changed. The high proportion (52 per cent) of diverticula showing mucosa similar to that of the stomach does not necessarily indicate that ulceration is the cause of bleeding. When present in the authors' series, ulcers were acute and did not resemble the usual peptic ulcer. The association of hemorrhage from the intestine with other acute abdominal symptoms should suggest the diagnosis of Meckel's diverticulum. Examination of the terminal ileum should be performed at laparotomy.

Cancer of Cervix.—Phaneuf reports three cases of cancer of the cervix in nulliparous women. The patients were seen during an interval of five months. Their ages were 25 years, 28 years and 34 years, respectively. In two the disease was arrested by roentgen and radium treatment, although it is too early to say what the future holds for them. In the third, the condition progressed despite treatment and the patient is now in the last stages of the disease. The author emphasizes the fact that semiannual examinations and prophylactic treatment of the precancerous lesion might have prevented the appearance of an extensive cancer of the cervix in these women.

New Orleans Medical and Surgical Journal

84: 741-840 (April) 1932

Toxoid Immunization Campaign. W. H. Robin, New Orleans.—p. 741.
Newer Conception of Diphtheria Immunization. R. A. Strong, New Orleans.—p. 743.
Economic Phase of Diphtheria Immunization in New Orleans. J. Signorelli, New Orleans.—p. 747.
Treatment of Certain Acute Abdominal Conditions. W. H. Parsons, Vicksburg, Miss.—p. 749.
Induced Paralysis of Diaphragm. J. W. Barksdale, Jackson, Miss., and S. F. Strain, Sanatorium, Miss.—p. 753.
Roentgen-Ray Treatment of Inflammatory and Nonmalignant Conditions. E. B. van Ness, Jackson, Miss.—p. 757.
Roentgen Ray in Diagnosis of Malignancy. E. C. Samuel and E. R. Bowie, New Orleans.—p. 760.
Blood Transfusion. S. E. Field, Centreville, Miss.—p. 764.
Use of Iodine in Goiter. E. R. Nobles, Rosedale, Miss.—p. 769.
Pyelonephritis Occurring in Pregnancy. W. A. Reed, New Orleans.—p. 775.
Industrial Eye Injuries. J. B. Stanford, Memphis, Tenn.—p. 782.
Early Syphilis: Its Diagnosis and Treatment. R. L. Gordon, New Orleans.—p. 788.
Disability Following Fractures. K. Rand, Alexander, La.—p. 791.
Louisiana Criminal Code Relative to Functioning of State Lunacy Commission. W. P. Butler, Shreveport, La.—p. 795.

Pennsylvania Medical Journal, Harrisburg

35: 437-532 (April) 1932

Reminiscences of Forty Years in Ophthalmology. W. C. Posey, Philadelphia.—p. 437.
Methods That Have Proved Successful in Treatment of Some of Common and Obstinate Diseases of Skin. C. J. White, Boston.—p. 443.
Analysis of Forty Thymus Glands from Infants, with Especial Reference to Hassall's Corpuscles. G. A. Clark, Scranton.—p. 449.
Proctologic Symptomatology and Diagnosis. M. S. Kleckner, Allentown.—p. 452.
Use of Laboratory Methods in Cardiovascular Diagnosis. C. C. Wolferth, Philadelphia.—p. 456.

Physical Therapeutics, Elmira, N. Y.

50: 81-120 (March) 1932

Electrosurgery: A Few Applications in Surgical Urology. W. S. Pugh, New York.—p. 81.
Practical Review of Direct Continuous Current. J. E. G. Waddington, Detroit.—p. 92.
Radiant Heat and Light. E. L. Libbert, Lawrenceburg, Ind.—p. 97.

Public Health Reports, Washington, D. C.

47: 931-986 (April 22) 1932

*Experimental Transmission of Endemic Typhus Fever of United States by Rat Flea Ceratophyllus Fasciatus. R. E. Dyer, W. G. Workman, L. F. Badger and A. Rumreich.—p. 931.
Formation of Arsenoxide from Arsphenamines in Living Animal and in Test-Tube Oxidations. S. M. Rosenthal.—p. 933.

Experimental Transmission of Endemic Typhus Fever.—In their first studies on the part played by rat fleas in the transmission of endemic typhus from rat to rat or from rat to man, Dyer and his associates incriminated two species of rat fleas, namely, Xenopsylla cheopis and Ceratophyllus fasciatus. The infectibility of Xenopsylla cheopis with endemic typhus was shown and the probable mechanism by which the infection is transmitted to man was elucidated in a large measure in their more recent studies. In their present study the authors describe an experiment in which they demonstrated that the virus of endemic typhus may be transmitted from rat to rat by means of the rat flea Ceratophyllus fasciatus.

Radiology, St. Paul

18: 713-878 (April) 1932

Physical Foundation of Grenz Ray Therapy. O. Glasser, Cleveland.—p. 713.
*Treatment of Superficial Fungus Infections with Long Wavelength Roentgen Rays (Grenz Rays): Further Observations. M. Dorne and C. White, Chicago.—p. 727.
*Grenz Ray Therapy. A. Reisner, Frankfort-on-Main, Germany.—p. 733.
Roentgen Therapy in Bone Metastasis of Carcinoma. K. W. Stenstrom and L. G. Ericksen, Minneapolis.—p. 741.
*Roentgen-Ray Treatment of Keloidal and Hypertrophic Scars. B. H. Sherman, Hollywood, Calif.—p. 754.
*Roentgen-Ray Treatment of Gonorrheal Complications in Males. F. Liberson, New York.—p. 758.
Apparent Therapeutic Effect of Roentgen Ray on Clinical Course of Acute Mastoiditis: Preliminary Report. R. Schillinger, Brooklyn.—p. 763.
*Radiotherapy of Pituitary Tumors. W. Harris and H. Selinsky, New York.—p. 777.
Roentgen-Ray Study of Passage of Different Foodstuffs Through Small Intestine of Man. L. J. Menville, New Orleans.—p. 783.
Present Status of Problem of Measurement of Roentgen-Ray Intensity and Quality. J. W. M. DuMond and A. Hoyt, Pasadena, Calif.—p. 787.
Roentgen Evidence of Osseus Manifestations in Sickle-Cell (Drepanocytic) Anemia and in Mediterranean (Erythroblastic) Anemia. L. T. LeWald, New York.—p. 792.
Present Status of Appendiceal Diagnosis. R. A. Payne, Portland, Ore.—p. 799.
Heredity of Cancer. N. Dobrovolskaia-Zavadskaia, Paris, France.—p. 805.

Superficial Fungus Infections.—Dorne and White add an experience of twenty-two more cases to a previous report of thirty patients who had dermatoses which were considered to be of superficial fungus infection and who were treated with infraroentgen rays used in fractional doses. With such dosage, infections due to yeastlike fungi responded quite uniformly to therapy, while those of hyphomycetic origin showed little, if any, improvement.

Infraroentgen Therapy.—Reisner states that from a theoretical standpoint there are two points of advantage in the treatment of skin diseases by roentgen rays of long wavelength. One is the almost complete absorption in the upper layers of the skin, which has been proved by absorption measurements; the other is the protection of the deeper layers of the tissue. In addition, there is also the wide margin of safety between the therapeutically effective dose and the injuring dose, which decreases with increasing wavelength. In a series of cases of eczema and neurodermatosis in which the lesions were symmetrical, the author carried out the treatment by exposing one side to infraroentgen rays and the other side to ordinary roentgen rays. While in the overwhelming majority there was an even regression, sometimes there was a preponderance of the effect of infraroentgen rays. From a study of the world literature and from his own experience with infraroentgen rays, the author sums up the present situation in this field as follows: 1. The basis for successful infraroentgen therapy is exact dosage. 2. For the treatment of superficial skin diseases, infraroentgen therapy offers a valuable addition to the therapeutic armamentarium. 3. While the therapeutic effect is approximately the same as that of ordinary roentgen rays, sometimes it seems slightly superior. 4. The advantage lies in the fact that the deeper layers of tissue are well protected and that the therapeutic dose can apparently be administered without danger of immediate or delayed injuries. 5. In the treatment of local disease, the value of general body exposures to infraroentgen rays is a greatly debated problem. 6. A final judgment as to the effect of infraroentgen rays on internal diseases cannot be passed at the present, but further investigations in a large number of cases are necessary and seem to be worth the effort. 7. Injuries following infraroentgen therapy can apparently be avoided if very soft rays are used and if the smallest dose required for the therapeutic result is administered.

Treatment of Keloidal and Hypertrophic Scars.—Sherman believes that one should be guarded in the prognosis in every case of keloid or scar, be it ever so small or recent, being particularly cautious as regards the syphilitic or the tuberculous type and of erosions on the face, hard lesions, and lesions in the dark-skinned races. Roentgen treatment should not be pushed to the point of producing telangiectasis; in these instances it would be better to use a less destructive wavelength. In the formation of scars there is a wide diversity of reactions. In some extensive injuries, whether lacerations, bruises or burns, there are bound to be mutilating scars with contractions, while in others with the same extensive injury the deformity is surprisingly light. As a general rule, given the amount of surface involved together with depth of tissue involved, one can make a fairly accurate determination of the amount of scar tissue to be expected. Probably the most important item in the treatment of these conditions is caution: caution in the application of whatever mode of treatment is used; fearlessness in calling on the plastic surgeon when he is needed, for dividing responsibility may help in cases in which failure impends, and especially caution in the prognosis, as it may save embarrassment later.

Gonorrheal Complications in Males.—Liberson studied the effects of high voltage roentgen therapy in the treatment of various complications of gonorrhea in 119 males over a period of six and one half years, with especial consideration for recurrences and for comparison with untreated control groups. In the order of efficacy, roentgen therapy appears uniformly effective in the painful heel due to periosteal spur; it has a limited field of usefulness in the treatment of refractory gonorrheal joint complications, especially for the relief of pain, but in gonorrheal epididymitis, adenitis and urethritis the results were not significant.

Roentgen Therapy of Pituitary Tumors.—Harris and Selinsky subjected thirteen persons with pituitary tumor to roentgen therapy and observed them at trimonthly intervals for varying lengths of time. Ten of the thirteen were females; three, males. Endocrine dysfunction consisted of manifestations of hypopituitarism in eight cases and of hyperpituitarism in four cases. Seven of the thirteen patients were distinctly benefited by the treatment and one showed temporary improvement. Amelioration of headache and improvement in vision were most frequently noted. In no case was there a complete disappearance of symptoms. Failure to respond to treatment is highly suggestive of a cystic tumor (craniopharyngeal pouch cyst). The authors believe that patients in whom diagnosis of pituitary tumor has been made should receive therapeutic trial with roentgen therapy before they are subjected to surgical intervention.

Rhode Island Medical Journal, Providence

15: 57-76 (April) 1932

Use of Indwelling Ureteral Catheter: Clinical Study. E. Stone, Providence.—p. 57.
Psychiatric Aspects of Medical Disease. H. O. Colomb, Pineville, La. —p. 62.

South Carolina Medical Assn. Journal, Greenville

28: 76-121 (April) 1932

Etiology of Pellagra. E. E. Epting, Anderson.—p. 88.
Sarcoid Associated with Tuberculosis of Larynx: Report of Case. J. R. Allison and P. V. Mikell, Columbia.—p. 89.
Lower Urinary Tract Obstruction in Infants and Children. M. F. Campbell, New York.—p. 96.

Southern Surgeon, Atlanta, Ga.

1: 1-88 (April) 1932

In Memoriam. G. W. Quillian, Atlanta, Ga.—p. 1.
Diagnosis and Management of Brain Injuries. C. E. Dowman, Atlanta, Ga.—p. 5.
The Dramatic Abdomen. J. B. Deaver, Philadelphia.—p. 11.
*Differential Diagnosis and Management of Senile Prostate. H. H. Young, Baltimore.—p. 16.
*Fourth Epoch in Treatment of Cancer of Breast: Use of Radium at Time of Operation Followed by Roentgen-Ray Therapy. J. T. Moore, Houston, Texas.—p. 28.
*Activated and Apathetic Hyperthyroidism: Their Importance in Cases of Heart Failure. F. H. Lahey, Boston.—p. 36.
*Tumors of Colon. J. F. Erdmann, New York.—p. 39.
Appendix as Focus of Infection. H. A. Royster, Raleigh, N. C.—p. 48.
Wright Method of Treating Chronic Ulcers of Leg. H. R. Shands, Jackson, Miss.—p. 51.
Therapeutic Paravertebral Alcoholic Block: Observations of Its Effects Following Its Use in Angina, Asthma and Raynaud's Disease. F. G. DuBose, Selma, Ala.—p. 57.
*Transplantation of Ureters. R. C. Coffey, Portland, Ore.—p. 64.
Roentgenographic Delineation of Urogenital Tract. J. F. McCarthy and J. S. Ritter, New York.—p. 70.
Ununited Fractures in Long Bones. W. C. Campbell, Memphis, Tenn. —p. 74.

Diagnosis and Management of Senile Prostate.—Young is convinced that in prostatectomy the perineal route is not only technically the most satisfactory but also the safest. It is accompanied by a mortality much less than can be obtained through the suprapubic route, whether the operation is done in one or two stages. The author presents an analysis of 197 consecutive cases of perineal prostatectomy without a fatality. This operation permits the surgeon to see the prostate, to examine minutely any region suspected of being malignant, to carry out operation under visual inspection, and to provide for complete hemostasis and good dependent drainage. These attributes make the perineal route unquestionably the method of choice, and are responsible for its greatly lower mortality.

Fourth Epoch in Treatment of Cancer of Breast.—Moore reports a plan of radium irradiation, to be used at the time of and in conjunction with surgery in the treatment of operable carcinoma of the breast. In addition to a radical operation, these patients should be given the advantage of carefully planned radium irradiation at the time of operation. Such treatment is far more efficacious in dealing with cancer of the breast than is the scalpel alone. The use of well planned roentgen treatments probably should follow after two to three months, being governed by the condition of the patient. The patients must be carefully watched for any evidence of a growth at any point so that irradiation may be given promptly, and their general health must be kept constantly in mind.

Activated and Apathetic Hyperthyroidism.—Lahey states that there is no pathologic evidence that heart damage results from prolonged hyperthyroidism. Even though a patient may have long suffered from hyperthyroidism, if relieved of it his heart is as sound as before. There are no laboratory experiments to prove that the prolonged feeding of thyroid extract damages the heart. Still further evidence is that cardiac decompensation occurs only in persons of middle or late life, who have had years in which to develop heart disease. All these factors lead to the belief that cardiac decompensation with hyperthyroidism is a result of a hyperthyroidism superimposed on an already damaged heart. Hyperthyroidism produces tachycardia, a definite extra load for an already damaged heart. Then cardiac irregularity interrupts the rest periods, throwing an additional burden on the heart. When auricular fibrillation is established, intermittent failure and finally chronic and permanent failure follow. In every case of apathetic hyperthyroidism there is grave danger of an unexpected death following operation. No matter how favorable conditions appear at operation, if the author is sure that the patient suffers from apathetic hyperthyroidism he divides the operation into two stages. In the first stage he does a right hemithyroidectomy and then sends the patient home for six weeks, to return at the end of that time for the removal of the other lobe. He feels strongly that this is the only safe course. He stresses, too, the necessity of carefully investigating patients with chronic heart failure for underlying hyperthyroidism. This type of hyperthyroidism is atypical and often obscured by the superimposed cardiac decompensation. Once recognized, however, restoration of cardiac function through subtotal thyroidectomy, and operation with relatively low mortality rate in such serious cases, may be expected.

Tumors of Colon.—Erdmann reports 107 cases of tumors of the colon coming under his operative care during the past three years. He is satisfied that the classifiation of these tumors as to region should not include the rectosigmoid as taking in the true rectum. His object in this classification is twofold as, primarily, the operation is or should be a perineal one and, secondly, the results of the perineal operation in the true rectal or rectal and anal are far ahead of those in the so-called rectosigmoid inclusion. Granted that a perineal anus has for years been abhorred by surgeons, from what the author has observed in patients on whom he has performed the perineal operation, he himself would prefer a perineal operation with its low mortality, its postoperative functions and its ease of attention to that of sigmoidostomy. When the growth involves the rectosigmoid junction, the term itself implies an invasion of the lower sigmoid and the proximal rectum. On growths in this region it is most difficult to perform any operation but the most extensive, involving permanent colostomy. The operation also carries a relatively high mortality as compared to operations on rectal neoplasms. In general, the author is accepting more patients today whom years ago he would have refused for anything but colostomy.

Transplantation of Ureters.—Coffey calls attention to the fact that transplantation of the ureters is the only place in the domain of surgery in which one single principle controls the entire situation. Under all conditions in which nature must deliver fluid through a duct from an organ in which the pressure must be low and regular to a muscular reservoir in which the pressure is higher and is irregular, the end is accomplished by the mechanism of the valve. The only way that nature has made a valve for such a purpose at any point is by running the duct beneath the mucosa of the receiving organ for a distance before it enters into the lumen. This fundamental proposition forms the background of any successful technic for transplantation of the ureters into the intestine. Two other important considerations must be remembered: 1. When a ureter is transplanted, the swelling in the wall, at least in certain instances, temporarily retards or completely blocks the flow of urine from that kidney. If both ureters have been transplanted without the provision for the free passage of urine, the patient will often die from uremia. Sometimes this swelling does not obstruct the ureter, but it is generally conceded that bilateral transplantation of ureters without this provision is dangerous. 2. The operation must be done in an essentially septic field. Therefore, every effort to sterilize the field and produce an aseptic operation should be made. Tube technic, which the author describes in detail, should be used as a routine procedure except for special indications.

Wisconsin Medical Journal, Madison

31: 222-287 (April) 1932

Looking Ahead in Tuberculosis. R. H. Stiehm, Milwaukee.—p. 229.
Acute Fractures of Spinal Vertebrae Without Cord Injury: Report of One Hundred Cases. H. E. Conwell, Birmingham, Ala.—p. 230.
Asthma. H. T. Schlegel, Wausau.—p. 239.
Multiple Sensitiveness in Hay Fever and Asthma. H. P. Greeley, Madison.—p. 242.
Criminal Confessions Under Narcosis. W. F. Lorenz, Madison.—p. 245.
Neurosyphilis: Incidence in Admissions to Wisconsin State Penal and Correctional Institutions During Year *July 1, 1930, to June 30, 1931.* S. A. McCormick, Madison.—p. 251.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal, London

49: 1-114 (Spring) 1932

Some Observations on Relationship Between Structure and Function. J. R. Charles.—p. 1.
Human Improvability. C. S. Myers.—p. 31.
Trigeminal Neuralgia. H. H. Carleton.—p. 47.
*Some Observations on Relative Efficacy of Various Treatments of Pernicious Anemia. G. L. Ormerod.—p. 61.

Treatment of Pernicious Anemia.—Ormerod states that up to the present time by far the best results in the treatment of pernicious anemia have been achieved by the use of hog's stomach. By the regular use of this it may be said that pernicious anemia is a definitely curable disease. Whereas the use of liver merely supplies the patients with the ready-made substance that is essential for the formation of the red cells, the use of stomach tissue supplies them with that which is wanted to enable them to make their own red blood cell formative material. The remissions that take place after the use of hog's stomach are of the same nature as those caused by liver but occur more rapidly. The addition of hydrochloric acid is much more rarely needed when stomach is used then when liver is the treatment. Few deaths have been recorded in those taking the treatment with stomach extract, and in nearly every case it was found that the extract was not being taken regularly. Previous blood transfusions appear to make no difference in the result. Several patients who have failed to respond to liver in adequate amounts have immediately improved on starting to take hog's stomach, either raw or as a desiccated preparation. If it can only doubtfully be said that absence of improvement with liver indicates that the disease is not pernicious anemia, it can certainly be said so of hog's stomach.

British Journal of Experimental Pathology, London

13: 109-188 (April) 1932

*Mobilization and Excretion of Calcium Following Overdosage with Irradiated Ergosterol. N. B. Taylor and C. B. Weld.—p. 109.
Displacement Method for Estimating Cell Volume in Blood. C. E. Jenkins.—p. 127.
Observations on Inorganic Sulphate Content of Blood in Eclampsia. D. F. Anderson and S. L. Tompsett.—p. 130.
Effect of Intravenous Injection of Glycine on Serum Calcium. N. Morris, J. B. Rennie and S. Morris.—p. 132.
Attempt to Demonstrate Residual Virus in Monkeys Which Had Recovered from Yellow Fever. E. Hindle.—p. 135.
*Action of Acetylcholine on Gastric Secretion in Man. J. F. Wilkinson.—p. 141.
Basal Oxygen Consumption of Goitrous and Nongoitrous Rats. A. W. Spence.—p. 149.
Effect of Vitamin Deficiency on Structure of Thyroid and Thymus Glands. A. W. Spence.—p. 157.
Demonstration of Herpetic Antibody in Human Serums by Complement Fixation, and Correlation Between Its Presence and Infection with Herpes Virus. R. T. Brain.—p. 166.
Spontaneous Fluctuations in Reticulocyte Count in Pigeon's Blood. Lucy Wills.—p. 172.
Technic of Exposing Chorio-Allantoic Membrane of Chick Embryo for Experimental Purposes. Daphne Goulston and J. C. Mottram.—p. 175.
*Serum Calcium Content in Eclampsia. D. F. Anderson.—p. 182.

Excretion of Calcium.—Taylor and Weld report that large doses of viosterol when administered to dogs in negative calcium balance cause hypercalcemia. The total calcium excretion is also increased. The experiments indicate that the excess calcium in the serum is derived from body tissues. Hypercalcemia was produced by the intravenous administration of viosterol to cats from which the gastro-intestinal tract had been removed. Cats poisoned with lead and given large doses of ergosterol after the lead administration had been discontinued showed a striking increase in the quantity of the metal excreted in the urine. Large quantities of calcium were excreted with the lead. In normal dogs, calcium is excreted chiefly by the intestine; only small quantities appear in the urine. Under the influence of large doses of viosterol, the route for the excretion of calcium is turned from the intestine to the kidney. Evidence is submitted in support of the conclusion that the reduction in fecal calcium that follows ergosterol administration in this dosage is due to depression of the intestinal excretion rather than, as has been supposed, to increased absorption. No correlation between the calcium content of the diet and the quantity of calcium in the feces could be found. Animals during starvation excreted as much calcium in the feces as those on diets containing moderate quantities of calcium. The amount of calcium excreted by animals on a normal diet was just as great as when, during later periods, they received excess calcium in the form of calcium chloride. The authors conclude that the hypercalcemia following large doses of viosterol is due to the withdrawal of calcium from the skeleton. The calcium mobilized from the bones accumulates in the serum. A certain level of serum calcium having been reached, an increase in the urinary calcium follows. Ergosterol in the amounts that produce hypercalcemia does not increase absorption of calcium from the intestine.

Acetylcholine.—Wilkinson investigated the stimulating influence of acetylcholine on gastric secretion in normal and abnormal subjects. He found that its effects on the gastric secretion in normal and abnormal individuals are uncertain. In the majority of normal cases there is an increased secretion of free hydrochloric acid and total chlorides following injection, but it is much less marked than that produced by histamine. The response increases slightly with the dose of acetylcholine used. A small group of normal subjects failed to display any alteration in secretion. Acetylcholine is not so powerful as histamine and frequently fails to disclose pseudo-achlorhydric conditions. It has rather more marked effects in cases showing hypo-acidity and Raynaud's disease, but there also histamine is more powerful. Atropine readily counteracts or prevents the effects of acetylcholine on the gastric secretory mechanism.

Serum Calcium Content in Eclampsia.—In 82 per cent of forty-four cases of eclampsia investigated by Anderson, the patients showed subnormal serum calcium values—that is, 9 mg. per hundred cubic centimeters and under. The lowering of the serum calcium in such a large percentage of cases is suggestive. With a lessened concentration, as occurs toward the end of pregnancy, any sudden change or demand on the reserves may prove too much for the maternal organism. It is not indicated that lowered calcium concentration is necessarily the etiologic factor in eclampsia but is a sign, just as is the raised serum inorganic sulphur. Calcium deficiency may not be due to an absence of calcium from the body but to the incapacity to utilize the calcium that is present. Symptoms that appear in normal pregnancy, as the result of the increased activity of the organs of internal secretion, may reach a degree that is definitely pathologic in an organism less capable of adaptation to the changing demands of the fetal organism.

British Journal of Radiology, London

5: 289-384 (April) 1932

*Conversion of Chronic into Acute Leukemic Myelosis: Contribution to Study of "Myeloblast" and of Nature of Leukemic Process. A. Piney.—p. 289.
Economy and Quality in Radiology. A. Bouwers.—p. 311.
III. Intensity of Ultraviolet Radiation from Different Parts of Carbon Arc. E. A. Owen and P. Wright.—p. 324.
IV. Spectroscopic Analysis of Ultraviolet Radiation from Different Arcs. E. A. Owen and P. Wright.—p. 330.
Allantoic Membrane of Chick Exposed to Beta Radiation. W. Moppett.—p. 342.
Intracranial Dermoid Cyst. R. A. C. Rigby.—p. 349.
Short Description of Three Interesting Cases. O. L. Rhys.—p. 351.
Roentgen-Ray Analysis of Teeth. J. Thewlis.—p. 353.
Bone Tumors. J. F. Brailsford.—p. 360.
*Periodic Fluctuation of Electric Field of Human Body. W. E. Boyd.—p. 362.
Protective Devices and Tools Used in Radium Department, Royal Berkshire Hospital, Reading. A. O. Forder.—p. 368.

Conversion of Chronic Into Acute Leukemic Myelosis.—According to Piney, it is not known why a case of chronic leukemic myelosis should ultimately become acute. Occasionally the change appears to have followed intense roentgen treatment. In one case described there was good response to roentgen treatment for several years, but ultimately the disease became acute and the patient died in a short time. In another case there was not even transient improvement; roentgen rays were followed almost immediately by a rise of myeloblasts from 16.3 to 84.2 per cent, with death in a few days.

Periodic Fluctuation of Electric Field of Human Body.—According to Boyd, certain of the potentials on the skin of the human body show periodic change of the same periodicity as the electrocardiograph current change. The distribution of the intensity of these potentials varies, in regard both to the site on the body surface and also to changes in the static electrical condition and environment of the body. It may be modified by the attachment of wires from earth to various sites. The periodic static potential change is due to direct internal communication from the region of the heart or the heart itself.

British Medical Journal, London

1: 693-738 (April 16) 1932

Observations on Control of Silicosis in Industry of South Africa. L. G. Irvine.—p. 693.
Comments on Recent Outbreak of Pneumonia. F. J. Poynton.—p. 698.
*Acute Mastoiditis. J. Lewin.—p. 699.
*Comparative Study of Chest Radiograms and Mantoux Test in Children. Dorothy J. Dow and W. E. Lloyd.—p. 701.
*True Place of Serum in Prophylaxis of Measles. J. I. Collier.—p. 703.
*Osteogenesis Imperfecta: Two Unusual Examples. J. Crooks.—p. 705.

Acute Mastoiditis.—Lewin reports six cases of acute mastoiditis and enumerates the following points, which may be of assistance in establishing a diagnosis of this condition. 1. It is never too early in the course of an acute otitis media to suspect mastoiditis. 2. Persistent pyrexia, in spite of adequate drainage of the middle ear, suggests mastoid involvement, and is itself an indication for operation. 3. Absence of tenderness and signs of inflammation over the mastoid do not negative a diagnosis of mastoiditis. 4. Involvement of important structures, such as the dura mater and the facial nerve, are often the first indications of mastoiditis and must be constantly watched for. 5. To await edema behind the ear and pushing forward of the auricle is to allow the disease to progress unduly. These signs only indicate that the suppuration has come right through to the periosteum. 6. Early diagnosis and operation spell less danger and less possibility of continued suppuration later on. There are many cases sent to the hospital wrongly diagnosed as mastoiditis on the strength of edema and displacement of the auricle, and there are two conditions that commonly give rise to them. The first is inflammation and suppuration in the postauricular lymph node, which is usually secondary to scalp infections or pediculi. The absence of otorrhea or any form of otitis media should give the clue to the correct diagnosis. The second is meatal furuncle. Furuncles occur only in the outer hair-bearing area of the meatus, and the lining here is so closely adherent to the underlying cartilage that the pus is always in the early stages under considerable tension and causes excruciating pain. The infection may pass backward and give rise to edema and tenderness over the mastoid. The presence of a discharge from the ear further suggests the possibility of mastoiditis. There is no real excuse, however, for an error of diagnosis, as a meatal furuncle can always be seen on inspection. Even if its core cannot be distinguished, the swelling and obstruction to the meatus are beyond anything seen in an acute otitis. The intensity of the pain is also characteristic.

Chest Roentgenograms and Mantoux Test in Children.—Dow and Lloyd emphasize the fact that a large number of intrathoracic infiltrations seen in children are nontuberculous. The distribution of the infiltration appears to be much the same in all children, whether they are infected with the tubercle bacillus or free of infection, a little over 50 per cent being in the lower zone, and the remaining 50 per cent being equally distributed in the upper and middle zones of the lung. Upper zone infiltrations are more likely to be tuberculous than lower zone infiltrations. In view of the fact that twenty-two of fifty-five children who were considered to have roentgen evidence of calcified tracheobronchial lymph nodes did not react to tuberculin, it would appear that the roentgenologic criteria in this respect were not sufficiently strict. In every case in which there is any doubt about the presence of calcified lymph nodes, an oblique roentgenogram should be taken, so as to exclude the possibility of mistaking a blood vessel or other structure viewed "end on" as being a calcified nodule. It would appear that, in attempting to localize the lesion in children who are shown to be tuberculous by a positive Mantoux reaction, the chest roentgenogram is not so helpful as might have been supposed. The lesions, if in the lymph nodes, are invisible unless calcified, and the majority of such lesions may be extrathoracic. Further, the authors' experience shows that *nontuberculous infiltration* and fibrosis are more common than tuberculous, from which they cannot be differentiated with certainty. Therefore, while the chest roentgenogram in children is of great clinical value, it has in this respect these definite limitations, and its interpretation in the "Mantoux-positive" child needs the greatest care.

Serum in Prophylaxis of Measles.—Collier emphasizes the fact that in practice the medical man is usually first called in to see a case of measles on the appearance of the rash. Should the case be seen *in the prodromal stage*, a diagnosis of measles would be made only on the appearance of Koplik's spots. As serum has no effect when injected after the ninth day of incubation, all cases of measles seen in general practice are too late for serum treatment. From this point of view the serum treatment in hospital cases of measles is more hopeless still. The usual hospital case is one in which the patient has been treated privately for several days and then sent into the hospital because the disease is not taking its usual course and complications are setting in. Of all cases of measles in which the patients are treated in fever hospitals, roughly one fourth are already complicating. It will be seen, therefore, that, leaving out the problem of the contacts who are never brought in for treatment, all measles cases are first seen and diagnosed *when it is too* late to apply serum treatment. The author believes that the place of convalescent serum in the prophylaxis of measles is to ensure a modified attack, and only in exceptional cases to produce complete protection. The use of serum today is of little practical value in the control of measles epidemics and in influencing the resulting mortality.

Osteogenesis Imperfecta.—According to Crooks, osteogenesis imperfecta, osteitis deformans, and generalized osteitis fibrosa may be grouped together as diseases sharing to some degree the same pathologic basis, related to calcium and phosphorus metabolism and possibly to the activity of the parathyroids. In all three of these disorders there is defective calcification of bone, and liability to fractures; the plasma phosphatase, that enzyme which is responsible for the deposition of calcium from the phosphoric esters of the blood, is high. In two of them, osteogenesis imperfecta and osteitis deformans, otosclerosis may develop. Of two cases of osteogenesis imperfecta reported by the author, the first is of interest because the mother suffers from osteitis deformans, while her only child has osteogenesis imperfecta, and the second affords an illustration of the hereditary tendency in osteogenesis imperfecta.

Indian Medical Gazette, Calcutta

67: 181-240 (April) 1932

Atebrin: Synthetic Drug for Treatment of Malaria. L. E. Napier and B. M. Das Gupta.—p. 181.
Field Experiments with Atebrin and Plasmochin. L. E. Napier, Dorothy Butcher and C. R. Das Gupta.—p. 186.
Behavior of Plasmodia in Mosquito After Treatment of Human Host with Atebrin. C. Strickland and D. N. Roy.—p. 191.
Failure of Toddalia Aculeata in Treatment of Malaria. R. B. B. N. Vyas and B. B. Bhatia.—p. 192.
Berberine and Berberine-Containing Plants in Pharmacology and Therapeutics. R. N. Chopra, B. B. Dikshit and J. S. Chowhan.—p. 194.

Journal of Tropical Medicine and Hygiene, London

35: 97-112 (April 1) 1932

*Note on Tsetse Flies. J. F. Corson.—p. 97.
Etiology of "Egyptian Splenomegaly." R. Girges.—p. 99.

Tsetse Flies.—After feeding for some weeks on infected sheep or goats, an unusually large proportion of a small number of flies of Glossina pallidipes were found by Corson to have infected salivary glands. The pupal period of male flies was found to be usually two days longer than that of female flies. It was found that a tsetse fly in captivity may abstain from feeding for as long as fourteen days without apparent loss of health or activity. Experiment showed that tsetse flies, in bottles, readily bit in complete darkness. Tsetse flies readily attacked and fed on fowls, guinea-fowl and francolins, and the birds allowed them to feed and seemed to take no notice of the flies.

Kenya & East African Medical Journal, Nairobi

8: 331-360 (March) 1932

Influence of Light and Heat on Human Body. J. H. Sequeira.—p. 332.

Lancet, London

1: 815-866 (April 16) 1932

*Rôle of Hemolytic Streptococci in Infective Disease. C. C. Okell.—p. 815.
*Effects of Injury on Brain. C. P. Symonds.—p. 820.
*Vaccinia and the Paschen Body: Infection Experiments with Centrifugalized Virus Filtrates. G. H. Eagles and J. C. G. Ledingham.—p. 823.
Malaria Treated with Atebrin: A New Synthetic Drug: Report of Fifty Cases. R. Green.—p. 826.
Treatment by Marmite of Megalocytic Hyperchromic Anemia Occurring in Idiopathic Steatorrhea (Celiac Disease). Janet M. Vaughan and D. Hunter.—p. 829.

Hemolytic Streptococci in Infective Disease.—According to Okell, the properties of the exotoxin of the hemolytic streptococci which are responsible for the peculiar features of the scarlatinal exanthem and of the Dick test are highly important from the point of view of modern work on the prophylaxis of scarlet fever. One of the most remarkable properties of this toxin is that when it is suitably diluted and introduced into the human skin it produces a local erythematous patch which appears within a few hours, reaches a maximum within twenty-four hours and then rapidly fades away, leaving at times a desquamating area but never signs of more severe tissue damage. The consistency and appearance of this local patch of erythema so closely resemble those of an actual area of rash in a subject with scarlet fever that one readily infers that the mechanism of production in the two cases is identical. If this toxin is injected into susceptible human beings in large doses, for example in quantities upward of a thousand times the dose used in the Dick test, a clinical condition results which resembles a self-limited attack of scarlet fever so closely that it has been described as "the scarlatinal syndrome" or "miniature scarlet fever." The syndrome comes on a few hours after the injection. The patient often vomits, develops fever, a frequent pulse, a furred tongue and a generalized rash which in appearance and distribution is indistinguishable from that of scarlet fever. An interesting symptom recorded by a number of observers is soreness of the throat. As in true scarlet fever the rash avoids the face, and the appearance of circumoral pallor has been recorded. A slight albuminuria is common and there may even be transient hematuria. Recovery even from large doses seems rapid and complete. A case of the scarlatinal syndrome has been recorded in which desquamation followed.

Effects of Injury on Brain.—Among the several varieties of headaches encountered in persons following injuries of the brain, Symonds distinguishes three groups. The first is that complained of by the patient in terms of discomfort rather than pain—a continuous sense of numbness or pressure, aggravated by all kinds of mental stimulus, whether internal (e. g., worry over incapacity) or external (noise, bright light). This is the kind of headache present in psychogenic states but also in certain psychoses (for instance, the toxic group and the depressive) and may be considered as one of the reflections in consciousness of general cerebral incapacity. A second variety, often associated with the first, is equally frequent and of a quite different character. It is complained of as throbbing, piercing or aching, is localized rather than diffuse, occurs in bouts, usually of brief duration, and is aggravated by change of posture and physical effort as well as by mental stimuli. This kind of headache is often referred to the situation of the initial injury and is sometimes associated with superficial tenderness. Its character and relation to postural change and effort indicate dependence on some local physical cause, and this may be found in the shape of loculation in the subarachnoid mesh or ventricular system. A third and relatively uncommon variety of posttraumatic headache is that which appears in bouts of considerable duration and severity, and has the bursting quality and association with vomiting which suggests a hydrocephalic state. A bout of this kind may be provoked by alcoholic excess or by a severe physical effort. The liability may remain for a short time only after the injury or may persist indefinitely. If the lines of clinical distinction between these varieties of headache prove to be valid they will serve as guides to differential treatment. The "psychogenic" type of headache will be amenable only to general measures of cerebral rest, including the removal, when present, of litigation worries. The intermittent, localized variety of headache, related to change of posture, may prove amenable to relief by air injection or in severe cases by operation. The rarer hydrocephalic form invites treatment by repeated lumbar puncture.

Vaccinia and the Paschen Body.—Eagles and Ledingham call attention to the fact that improvements in technical methods of virus research have led to renewed study in recent years of the claim put forward by Paschen so long ago as 1906 that the elementary bodies discovered by him in material from vaccinial lesions might prove to be the actual etiologic agents. By high-speed centrifugation they are able to deplete Berkefeld filtrates of vaccinia virus almost entirely of their virus content and to recover the great bulk of the virus in deposits consisting in the main of Paschen bodies. Such deposits after repeated washings in physiologic solution of sodium chloride retain their potency, while the saline menstruum in which the bodies are suspended has been entirely depleted of virus. In the light of these experiments the present status of the Paschen body is discussed, and the conclusion is reached from all the evidence now available that the cause of vaccinia is the Paschen body.

Medical Journal of Australia, Sydney

1: 425-456 (March 26) 1932

History of Recording Blood Pressure. A. H. Â Court.—p. 425.
Blood Cultures in Work of General Hospital. W. J. Penfold and H. M. Butler.—p. 429.
*Facial Paralysis. P. Pickerill.—p. 433.
Trichomonas Vaginalis. R. F. Matters.—p. 434.
Skin Complications of Varicose Ulcers. L. P. U. Crivelli.—p. 435.
Some Reasons for Failure in Treatment of Hay Fever. D. L. Barlow.—p. 436.
Frame for Treatment of Early Stages of Acute Anterior Poliomyelitis. D. J. Glissan.—p. 437.

Facial Paralysis.—Pickerill discusses the treatment of facial paralysis by temporal and masseter muscle grafts. By this method he has obtained far better results than by any other method. The advantages claimed are (1) that the face as a whole is stabilized to a considerable extent, having two tonic muscles at least on the paralyzed side to oppose those on the normal side, and (2) that the patient is given the power of closing the eye on the paralyzed side. This is absolutely definite, and the serious risk therefore of corneal ulceration and conjunctivitis is eliminated. The improvement in appearance is pronounced. The raising of the lower lid and the consequent hiding of the reddened conjunctiva is of itself a decided advantage, and this is quite independent of muscular contraction. The closure of the eye in these cases, and the retraction of the mouth, are voluntary, but with constant practice the action in time becomes almost automatic. The author has previously described the technic of the operation and he has had no reason to modify it, except that he finds that he is increasingly inclined to favor the use of local anesthesia, because one can thereby not only make use of the patient's cooperation but also, as it were, better match the tension on the sound side. The amount of local anesthetic required is surprisingly small, especially if a pool is injected in the region of the foramen ovale. The author believes, too, that perhaps it is better to undertake the grafting in two stages, the first for the temporal muscle and the second for the masseter, at an interval of some weeks. An interesting physiologic problem crops up in some cases; it is what the author cells "impulse spread." In these cases the voluntary contraction definitely spreads from the grafted muscle to the paralyzed muscle (the fibers of which can be definitely seen to contract) and sometimes to other muscles.

Journal of Oriental Medicine, South Manchuria

16: 11-32 (Feb.) 1932

Experimental Studies on Biliary Cirrhosis of Liver, with Particular Reference to "Net-Necrosis." Shozo Kikuchi.—p. 12.
Syphilis of Lungs: Case. Y. Morikawa.—p. 14.
Presence of Yellowish Brown, Iron-Free Pigments in Lymph Nodes. E. Kitabatake.—p. 15.
Experimental Studies on Occurrence of Colitis, with Particular Reference to Significance of Liver in Mercurial Poisoning. Shozo Kikuchi.—p. 17.
Thymoma of Mediastinum: Case. Takeichi Ischii.—p. 19.
Pathology of Brain and Spinal Cord in Scarlet Fever. S. Masayama.—p. 22.
Hemorrhagic Necrosis of Pancreas: Case. M. Suzuki.—p. 24.
Acute Yellow Atrophy of Liver. T. S. Li.—p. 26.
Effect of Ligation of Common Bile Duct on Cholesterol Metabolism. M. Kameyama.—p. 27.
Application of Hormones in Surgical Diseases. K. Horie.—p. 28.
Toxic Jaundice: Experimental Study. Tadasu Itoh.—p. 29.
Distribution of Parasitic Diseases in Manchuria. K. Hiyeda.—p. 31.
C: N and Vacat O: N Quotients of Urine. H. Kubo.—p. 32.

Archives des Maladies du Cœur, Paris

25: 201-248 (April) 1932

Electrocardiographic Modifications of Isolated Heart in Connection with Variations of Calcium Intake. C. Laubry, J. Walser and L. Deglaude. —p. 201.

Complex Disturbances of Cardiac Mechanism in Severe Case of Typhoid. E. Géraudel and M. Mouquin.—p. 206.

Roentgen and Electrocardiographic Signs of Aneurysms of Intrapericardiac Portion of Ascending Aorta. M. R. Castex, L. L. Ramirez and A. Battro.—p. 222.

*Ventricular Tachycardia in Adams-Stokes Disease Caused by Auriculoventricular Dissociation. E. Coelho.—p. 232.

Ventricular Tachycardia in Adams-Stokes Disease Caused by Auriculoventricular Dissociation.—In a case of Adams-Stokes disease reported by Coelho, in which the patient died in syncopal crisis, the block was complicated by paroxysmal ventricular tachycardia appearing spontaneously and without therapeutic provocation. Electrocardiograms of some of the paroxysms were obtained. The author states that syncope and death in cases of Adams-Stokes disease of this type are due to ventricular tachycardia and the ventricular fibrillation that follows, never to ventricular arrest. Digitalis is absolutely contraindicated in cases of ventricular tachycardia associated with block; in these cases it increases the tendency to the production of auricular fibrillation. Epinephrine, ephedrine or barium chloride should not be injected during syncope produced by this mechanism, as they might cause auricular fibrillation and precipitate death. The appearance of ventricular tachycardia during the course of Adams-Stokes disease is a bad prognostic sign, announcing impending death.

Presse Médicale, Paris

40: *641-692 (April 27) 1932*

Anatomicopathologic and Bacteriologic Substratum of Tuberculous Rheumatism. F. Bezançon, M.-P. Weil, J. Delarue and V. Oumansky. —p. 641.

Large Paranephric Lipomyxosarcoma with Abdominopelvic Evolution. P. Brocq and P. Huu-Chi.—p. 644.

Chronic Familial and Infantile Rheumatism: A New Form of Chronic Fibrous Rheumatism. G. Marinesco and G. Allende.—p. 646.

Necessity of Systematic Study of Function of Mucous Glands from Point of View of Physiology, Pathology and Therapy. R. Leriche. —p. 650.

Mucus of the Gallbladder. R. Bauer and *A. Chinassi Hakki.—p. 650.*

Pleural Adhesions in Artificial Pneumothorax. D. Douady and A. Meyer. —p. 653.

Roentgen Diagnosis of Stenoses of Small Intestine. E. Piot.—p. 656.

Pathogenesis of Chronic Encapsulated Peritonitis. P. Wilmoth, C. Delval and J. Patel.—p. 659.

Ulcerated Duodenal Bulb: Significance and Value of Its Deformations. R. A. Gutmann.—p. 661.

Chronic Form of Periarteritis Nodosa. M. Macaigne and P. Nicaud. —p. 665.

*"Tilted Sacrum" as Cause of Pseudolumbago, Pseudosciatica and Pseudorheumatism of the Vertebrae. J. Gourdon.—p. 669.

Anatomicoclinical Study of Pigmentary Cirrhoses of Liver. M. Villaret, L. Justin-Vesancon and R. Even.—p. 672.

Do Certain Regions of Skin Possess Particular Capacity for Allergic Reaction? L.-M. Pautrier.—p. 674.

Traumatic Subluxation of Cervical Portion of Spinal Column. Ploye. —p. 677.

Rôle of Gastric Mucus in Pathogenesis of Gastric Ulcer. R. Fontaine. —p. 678.

Gastroscopy of Gastric Ulcer. F. Moutier.—p. 681.

Phrenicectomy, Scalenotomy and Extirpation of First Rib. A. Maurer and J. Megnin.—p. 685.

*Intestinal Polyposis. R. Bensaude, P. Hillemand and P. Augier.— p. 687.

"Tilted Sacrum" as Cause of Pseudolumbago and Pseudosciatica.—Gourdon discusses the anatomy, diagnosis, prophylaxis and therapy of the condition which he calls "tilted sacrum," by which he means sacro-iliac disjunction and forward displacement of the sacrum. The development of the condition is favored by a sacrum of the straight fetal type; the more it resembles this type, the greater the tendency of the sacro-iliac articulation to give way. Displacement of the sacrum may result from repeated little traumas, such as a long ride in a car, or a sudden great trauma, such as falling on the feet or the buttocks. In the case of a gradual process, the patient first experiences vague sensations of pain and weakness in the lower part of the back, with difficulty in walking and lifting heavy objects. Sudden movements, dropping on the feet, and so on, cause pain in the sacrolumbar region, finally developing into acute attacks of pain lasting several days, which may be accompanied by functional impotence of the lower extremities. These attacks occur with increasing frequency until the clinical picture corresponds to that of the suddenly dislocated sacrum, with acute shooting pains radiating from one or both sides of the lumbar region, buttocks and thighs. The posture is characteristic: accentuated lumbar lordosis with a maximum curve in the sacrolumbar region, protruding buttocks, ptosis of the abdomen, the thighs and knees slightly flexed. Movements of flexion in front of the trunk are difficult and painful. The patient experiences relief in dorsal decumbence; lateral decumbence is painful. Roentgenography of the pelvis confirms the mechanical origin of the disturbances observed by the patient. The disturbances following displacement of the thigh are almost always confused with lumbago, sciatica or, occasionally, vertebral rheumatism. The latter can be eliminated because of the vertebral localization of the pain, febrile evolution, and so on; concerning the former, the author says that the pain provoked by displacement of the sacrum is never localized in the sciatic nerve or the lumbar plexus. The real cause of pain is the tension exerted on the sacro-iliac ligaments by the tilting of the sacrum. Tilting of the sacrum may be foreseen and prevented. Distinct lumbar lordosis in children of from 9 to 12 is a precursor of dislocation of the sacrum. Such children should be given corrective exercises, wear lower heels, and avoid carrying heavy objects. After confinement, patients should wear a rigid band encircling the pelvis at the level of the sacrum and the pubic symphysis. For professional placement it is advisable to determine roentgenographically the closeness of the sacro-iliac articulations and inflection of the sacrum of persons engaged in carrying heavy burdens. Treatment of tilted sacrum comprises three things: disappearance of the tension of ligaments and muscles, straightening of the sacrum, and contraction of the pelvic symphyses. One cannot act on the sacrum without producing relaxation of the ligaments restraining motion. This is done by keeping patients in horizontal decumbence with elastic extension of the lower extremities and progressive anteroposterior compression of the pelvis. The redressment is fixed by a nonremovable plaster bandage encircling the pelvic girdle with extension to keep the hips straight; this is replaced after four or five months by a removable celluloid one. In cases in which the separation of the sacro-iliac articulations is wide, a graft is applied to the summit of the sacro-iliac articulation and the intervention is completed by suture of the pubic symphysis.

Intestinal Polyposis.—Bensaude and his co-workers distinguish three types of polyposis: (1) essential polyposis, neoplasm of unknown etiology developing on a mucosa of normal appearance; (2) polyposis of parasitic origin, the classic example of which is bilharzic polyposis, and (3) inflammatory polyposis of undetermined origin, which includes all cases in which the polypous process is secondary to an ulcerous condition of the mucosa, of unknown origin. The dominant symptom of essential polyposis is diarrhea. Rectal hemorrhages and tenesmus are other clinical signs, but none of them are characteristic. Polyposis is usually best diagnosed by proctoscopy, but while this is the method of choice, roentgen examination is also of importance in revealing the extent of the polypous process. The authors first slowly administer an enema of an opaque substance that adheres to the mucosa, then evacuate most of it and insufflate air into the intestine, thus securing two types of images. They advise making roentgenograms in many positions to visualize different segments of the intestine. The evolution of essential polyposis is cachectic and fatal. Death usually occurs from six to twelve years after the beginning of the disease. Three factors characterize the evolution of essential polyposis: (1) presence of only a slight degree of anemia, (2) appearance of edema and (3) existence of hippocratic fingers. Cancerous degeneration occurs in a large percentage of cases of polyposis. The association of polyposis and infantilism, previously reported in the literature, is stressed by the authors. They describe three histologically different types of polypi and also describe the microscopic picture in biopsy of polypi that have undergone neoplastic degeneration. The importance of biopsic examination is stressed. They consider the study of polyposis interesting from the theoretical standpoint, as it shows the possible inflammatory or parasitic origin of certain benign tumors, the links which connect the inflammatory polypi to adenomas. In connection with the malignant degeneration of polypi it poses the question of etiology of cancer. Discussing therapy, the authors state that they think all cases of successful medical or surgical palliative treatment reported concerned the inflammatory type of polyposis. In essential polyposis, destruction of the polypi is the only ideal therapy. In a low or localized process, diathermic electrocoagulation of each polypus can be undertaken. When the process is localized but inaccessible to the proctoscope, resection of the diseased portion of the intestine with or without accompanying diathermic treatment of the lower end of the intestine is advised. Treatment of generalized polyposis is more difficult. Good results with irradiation are rare, exclusion of the colon is difficult, and colectomy is accompanied by high mortality. It is possible to diminish the risk by early intervention, improving the general condition of the patient, clearing the lower part of the rectosigmoid by electrocoagulation, and carrying the opening of the anastomosis to a part of the intestine free of polypi.

Giornale di Clinica Medica, Parma

13: 163-232 (Feb. 29) 1932

*Active Changes of Pulmonary Paravertebral Sounds During Mitral Stenosis. G. Picchini.—p. 163.
Treatment of Pulmonary Suppuration, with Especial Attention to a New Method of Treatment (Intravenous Alcohol Therapy). F. Vannucci.—p. 178.
Marked Eosinophilia of Blood. M. Gavazzeni and L. Beltrametti.—p. 199.
Does the Duct of Wirsung Reestablish Itself After Ligation? O. Amorosi.—p. 212.

Active Changes of Pulmonary Paravertebral Sounds During Mitral Stenosis.—Picchini presents a study of thirty-five patients with mitral stenosis. Normally the left auricle has no influence on the active limitation of paravertebral resonance. When, however, the auricle increases in size, as in mitral stenosis, there is either diminution or disappearance of the left paravertebral resonance in respiration. Plexometric changes are not caused by the variable muscular tension of the region. They are explained by various positions and relations which the auricle has with the surrounding lung in the different positions of the body. During flexion the lung has more latitude for expanding itself posteriorly; the slight displacement of the auricle diminishes the pressure on the posterior section of the lungs, and this favors expansion of the postero-internal part of the lung. There is a decrease of the area of retrocardiac dulness and a possibility of limitation of resonance during respiration. When the atrium is greatly enlarged, flexion of the body does not overcome the pressure which the widely dilated auricle exercises on the parenchyma of the edge of the lung. The author concludes that: 1. Existence of the variable paravertebral resonance during respiration along the complete height of the thorax, but especially at the level of the seventh vertebral apophysis, indicates that the auricle is either not at all or only slightly enlarged. 2. Existence of resonance from the sixth to the eighth vertebral apophysis and extending 5 cm. to the side with or without retrocardiac dulness and their disappearance during flexion of the body indicate a moderate enlargement of the auricle. 3. More extended resonance from the fifth to the eighth interspinous space with or without slight changes on flexion of the body, with persistence or slight diminution of the auricular dulness, indicates great enlargement of the auricle.

Policlinico, Rome

39: 65-140 (Feb. 15) 1932. Surgical Section

*Tamponade of Renal Wounds with Catgut: Experimental Study. N. Cirillo.—p. 65.
*Decapsulation and Renal Denervation. V. Lozzi.—p. 84.
Numerical Variations of Leukocytes and Sedimentation Rate in Cholecystitis, Appendicitis and Adnexitis. M. R. Massimiliano.—p. 104.
*Experimental Biologic Research in Hemostasis, with Particular Attention to Craniocerebral Surgery. G. Pacetto.—p. 112.
Pyelographic Accidents: Emergency Nephrectomy Following Retrograde Pyelography in Calculous Hydronephrosis. S. Ragone.—p. 130.

Tamponade of Renal Wounds with Catgut.—Cirillo has used catgut tampons softened in warm water to influence favorably the healing process in renal wounds and resections in rabbits. Anatomopathologic examination proved that complete cure could be effected whether the pelvis of the kidney was excluded by the operative wound or whether it became part of it. The living tissue broke up the catgut and transformed it into a granular mass, which in turn was absorbed by the leukocytes and their proteolytic ferments. The granulation tissue then replaced the disappearing catgut. Zones of calcification were seldom noted. Healing began forty hours after tamponade and was complete in thirty days. It occurred at the expense of the adjacent renal parenchyma, which presented the following alterations: proliferation of the interlobular stroma and signs of albuminoid degeneration of the canals, revealing atrophy of a few glomeruli through the granular appearance of the protoplasm. For the purpose of organization of the catgut, a young connective tissue originated between the catgut and the renal parenchyma, adhering on one side to the increased stroma of the nearby tissue and on the other side to a tissue rich in cellular elements, fibroblasts and blood capillaries. Surgical investigation proved that catgut exercised a perfect, rapid and lasting hemostasis and favored the proliferative powers of the surrounding connective tissue. That the absence of sutures explained the better postoperative renal function was proved with the indigo carmine test after high section and exteriorization of the ureters.

Decapsulation and Renal Denervation.—In an anatomofunctional study of twenty patients, eighteen with renal decapsulation and two with renal denervation, Lozzi states that: 1. Renal decapsulation and partial renal denervation have the same vasomotor effect on the vascular system of the kidney. 2. There is no immediate or late injurious action of renal decapsulation on renal function. 3. In cases of reflex anuria, the decapsulation acts promptly in reestablishing the diuresis. 4. For chronic painful hematuric nephritis, it is actually the operation of choice. 5. In adhesion forming perinephritis with pain as well as in cases without precise indication, renal decapsulation has contributed immediate and later satisfying results. 6. In reexamined cases the indigo carmine and phenolsulphonphthalein tests revealed no injurious functional effect after renal decapsulation or partial denervation.

Research in Hemostasis, with Particular Attention to Craniocerebral Surgery.—Pacetto experimented with the grafting of living tissues in cerebral and abdominal hemorrhages. He found that the tissues adhere closely to the bleeding surface and have an efficacious hemostatic action when they are applied in hemorrhages originating in the parenchymatous organs. Of the various tissues, muscle is the most effective; next in order come the omentum and myocardium. The spleen, liver and kidney are almost void of hemostatic properties. The mechanism of this action is primarily of a chemicobiologic nature. This is demonstrated for the muscle tissue by the thoroughness of the hemostasis after removal of the tissue fragment which has determined it, and this especially in cases of serious hemorrhages. Heteroplastic transplantations of muscular tissue from live pigeons and rabbits are more active than autoplastic ones.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

125: 1-116 (April 18) 1932

*Pathogenesis of Inflammatory Form of Landry's Paralysis. H. Demme.—p. 1.
*Primary Atrophy of Cerebellar Cortex. W. Kirschbaum and A. Eichholz.—p. 21.
Hereditary Predisposition in Neurotics. Maria Gebbing.—p. 45.
Polyneuritis Following Use of Abortifacient. J. W. G. ter Braak and R. Carrillo.—p. 86.

Pathogenesis of Inflammatory Form of Landry's Paralysis.—Demme reports a case of Landry's paralysis with fatal termination in four days, which occurred in a man aged 36 in connection with a tonsillitis that followed exposure to severe cold. The paralysis appeared first in the legs, a few days after onset of the tonsillitis, and was followed by paralysis of the facial and arm muscles and of the trunk. Death resulted from respiratory paralysis four days after the first appearance of paralytic symptoms. The spinal fluid examinations before death showed increased albumin and globulin content in the absence of pleocytosis. Necropsy revealed occasional lymphocytic infiltrations in the peripheral nerves, especially the perineural tissue, and slight changes in the axis cylinders; lymphocytic infiltrations were found in the spinal ganglions, the roots of the spinal nerves and the meninges of the spinal cord. The ganglion cells were, in part, in a condition of primary irritation; occasional perivascular lymphocytic infiltrations were found in the medulla oblongata. Comparing his case with the small number of similar cases reported in the literature which were thoroughly studied anatomically, the author finds it clinically more acute than any of these, but the rapid death due to respiratory paralysis did not allow time for such severe histologic changes to take place in the nervous system as in most cases. On the basis of the extensive lymphocytic infiltrations and the changes in the spinal fluid, the author groups his case with the inflammatory form of Landry's paralysis. The etiology cannot be established because cultures of blood, spinal fluid and nerve substance remained negative. The author considers three forms of pathogenesis possible: 1. The tonsillitis effected a reduction of the immunobiologic powers of the organism, permitting the hypothetic virus of Landry's paralysis to invade the tissues or become pathogenic. 2. The agent that caused the tonsillitis produced toxins possessing a special affinity for the nervous system, analogous to postdiphtheritic paralysis. 3. Bacteria (such as the streptococci of tonsillitis) penetrated directly into the nervous system and produced the clinical symptoms. The author thinks the latter unlikely because of the anatomic substrata and the absence of pleocytosis in the spinal fluid. The only thing he recognizes with certainty is the etiologic significance of the angina following exposure to cold and the consequent reduction of the immunobiologic powers of the organism to a living or nonliving neurotropic agent.

Primary Atrophy of Cerebellar Cortex.—Kirschbaum and Eichholz describe a case of primary atrophy of the cerebellar cortex. An uncertainty in walking and standing, first noticed by the patient at about 20 years of age, increased progressively, causing him to seek medical care at the age of 49. Disturbance of coordination and equilibrium, intention tremor, halting speech and swaying gait resulted in a diagnosis of cerebellar disturbance of unknown cause. Another neurologic examination at 56 showed high grade ataxia of the arms and legs. At 59 motility had become much worse, the leg reflexes were increased, Babinski's reflex was pronounced on the left side and suggested on the right, and the abdominal reflexes were lacking. An attack of apoplexy paralyzing the right half of the body was followed by motor aphasia, fear and mental confusion. Progressive degeneration led to death shortly after. Necropsy revealed arteriosclerosis of the vessels of the brain, resulting in typical changes. The cerebellum exhibited the least arteriosclerotic changes, showing only a small focus of degeneration in the nucleus dentatus, but there was an independent disease of the cerebellum, a laminar atrophy of the Purkinje cells affecting predominantly the superior portion of the tuber vermis and the adjoining medial parts of the cerebellar hemisphere. The disease of the cerebellum, which started before the twentieth year, is to be considered as an acquired, primary, chronic progressive degeneration ending fatally through premature arteriosclerosis of the brain. The author thinks that his case corresponds clinically and anatomically to the "late cerebellar atrophy with cortical predominance" described by Marie, Foix and Alajouanine, although its onset was in youth, not middle age, as in the cases reported to date. For the pathogenesis the French authors assume a premature degeneration on the basis of infectious or toxic injury; other authors ascribe considerable importance to alcoholism. In this connection, strong misuse of alcohol for three generations in the family of the patient, and an intolerance for alcohol in the patient himself, is interesting and lends support to the author's hypothesis of a disturbance of anlage, a lack of differentiation and development of the affected parts, for which there is also some histologic evidence. How much the degenerative process is furthered by an intermediately occurring infectious disease, in this case rheumatism at the age of 20, will have to be shown by future observation of similar cases.

Klinische Wochenschrift, Berlin

11: *665-704 (April 16) 1932*

Significance of Various Causal Factors for Pathogenesis and Course of Pulmonary Tuberculosis. N. P. Tendeloo.—p. 665.
*Insulin Tolerance. W. Falta and R. Boller.—p. 668.
*Insulin Tolerance in Cases of Icterus. R. Boller and K. Überrack.—p. 671.
Action of Diiodotyrosine in Treatment of Exophthalmic Goiter. A. Schürmeyer and E. Wissmann.—p. 673.
Endolumbar Puncture and Suppression of Cerebral Hyperglycemia by Insulin. Mader.—p. 676.
Influence of Physical Factors on Diuresis. L. Gedda.—p. 678.
Thallium and Anterior Lobe of Hypophysis: Their Mutual Modification in White Mice. L. Bickel and A. Buschke.—p. 679.
Indications for and Results of Splenectomy as Early Operation in Various Diseases of Blood. V. Schilling.—p. 682.
Erythrocyte Sedimentation Speed During Senility and in Diabetes Mellitus. A. J. Burkardt.—p. 686.
Reply to Preceding Article. L. Remen.—p. 687.
Elimination of Hormones of Anterior Lobe of Hypophysis in Urine During Endocrine Disturbances. E. J. Kraus.—p. 687.
Determination of Rest Nitrogen and Its Fractions. F. Rappaport.—p. 688.
Observation of Chemotherapeutic Processes Under Fluorescence Microscope. N. von Jancsó.—p. 689.
Differential Diagnosis of Lymph Cysts of Lateral Cervical Triangle. C. Nordwig.—p. 689.

Insulin Tolerance.—Falta and Boller designate as insulin tolerance the capacity to cope with administered insulin without showing hypoglycemic manifestations. On the basis of tests and observations they consider 75 units as the upper limit of the insulin tolerance of normal persons. They observed that normal persons had various degrees of insulin tolerance, but the fluctuations were confined within certain limits, and the values were much below those observed in certain cases of insulin resistant diabetes. In obese persons the insulin tolerance was not increased. Of the persons with renal diabetes who were examined, all but one showed a normal insulin tolerance, and in this one case the symptoms were not entirely clear. In febrile conditions the insulin tolerance was sometimes increased. *A relationship between the height of the insulin* tolerance and the pyknic or asthenic constitutions was not observed.

Insulin Tolerance in Icterus.—Boller and Überrack tested the insulin tolerance of seventeen patients with various disorders of the liver. It was found that patients with impairment of the parenchyma of the liver had an insulin tolerance that was far above the normal. In many cases there was a noticeable parallelism between the galactose test and the insulin tolerance. The authors think that the insulin tolerance test can serve as a functional test of the liver.

Medizinische Klinik, Berlin

28: *605-638 (April 29) 1932. Partial Index*

Growth Manifestations. G. Bessau.—p. 605.
*Spontaneous Filling of Ventricles with Air When Cistern Puncture Is Done in Sitting Position. G. Schaltenbrand.—p. 609.
Aspects of Solitary Metastatic Arteriogenic Abscess of Liver. L. Sussi.—p. 611.
Pathogenesis of Funnel Chest. E. Flusser.—p. 612.
Differential Diagnosis of Diseases of Mouth, Jaw and Teeth. W. Weinberger.—p. 615.
Biliary Disorders in Course of Reducing Cures. Géza Hetényi.—p. 616.
Significance of Inflammatory Hyperemic Connective Tissue During Embryonal Life for Genesis of Malformations. A. Löwenstein.—p. 617.

Spontaneous Filling of Ventricles with Air.—Schaltenbrand shows that if cistern puncture is done while the patient is in the sitting position, the pressure in the cistern is usually negative and air enters into the ventricle or into the subdural space. This spontaneous filling with air is often sufficient for an encephalography. In occipital encephalography it is usually not necessary to inject air into the cistern, for it is sufficient to withdraw a quantity of fluid equal to the quantity of air that is to be introduced. In suitable cases, and if done by an experienced physician, this method is less dangerous and less unpleasant for the patient than encephalography by lumbar puncture. If spontaneous air filling is to be avoided in cistern puncture, the puncture has to be made while the patient is lying down.

Münchener medizinische Wochenschrift, Munich

79: *661-700 (April 22) 1932. Partial Index*

Morphologic Characteristics of Skin and Constitution. S. Bettmann.—p. 661.
Syphilis and Pregnancy. K. Zieler.—p. 663.
*Essential Hypochromic Anemia (Achylic Chlorosis) and Its Relations to Pernicious Anemia. H. Schulten.—p. 665.
Backache in Women. M. Samuel.—p. 667.
*Can Latent Tuberculous Foci Become Activated by Single Roentgenoscopy of Lung? N. Tsamboulas.—p. 671.
Treatment of Furuncles with Soap. H. von Baeyer.—p. 677.
Treatment of Rheumatic Polyarthritis and Its Complications with Large Doses of [illegible] L[illegible]r.—p. 677.
Method of [illegible] of Dextrose in Urine by Means of Potassi[illegible] Schur.—p. 679.

Essential Hypochromic Anemia and Its Relations to Pernicious Anemia.—It is pointed out by Schulten that the chronic cryptogenic anemias with hypochromic blood picture and with anacidity or with subacidity, which frequently develop in middle-aged women, have so much in common that they may be considered as a disease entity. Of the many terms that have been suggested in the literature, the author considers the designation "essential hypochromic anemia" as most suitable. The differentiation from pernicious anemia is necessary for a correct and effective therapy, for hypochromic anemia requires treatment with large doses of iron, whereas pernicious anemia requires liver therapy. Because of the therapeutic importance of the differential diagnosis, the author not only discusses the characteristic symptoms of hypochromic anemia but also gives a comparative table in which the corresponding symptoms of the two types of anemia are given in opposite columns. The table indicates that the color index, which is increased in pernicious anemia, is reduced in essential hypochromic anemia; and whereas in pernicious anemia the size of the erythrocytes is increased, it is reduced in hypochromic anemia. The table also lists differences in the number of leukocytes, in neutrophilia, in eosinophilia, in the bilirubin content of the serum, and in other morphologic and chemical characteristics of the blood in the two types of anemia. But in spite of these differences it is nevertheless probable that the two conditions are related, for they often occur in the same families and may even occur successively in the same person. The author thinks that the gastric disorder may be the common constitutional factor.

Can Latent Tuberculous Foci Become Activated by Single Roentgenoscopy of Lung?—Tsamboulas relates that occasionally apparently healthy persons, who were examined for a health certificate or for similar purposes, showed pulmonary symptoms shortly after the roentgenologic examinations. The further observation of such patients led to the assumption that a latent tuberculous process had become activated and that the irritative action of the roentgen rays was probably responsible for this activation. In order to gain some insight into this problem, the author observed carefully the reactions that followed the routine roentgenoscopy of the thorax of patients with manifest pulmonary tuberculosis. He always noted an increase in the sedimentation speed of the erythrocytes; also an increase in globulin and in fibrinogen, and a higher basal metabolic rate. In some cases there also was a slight increase in the temperature. Roentgenoscopy of the thorax of healthy persons did not produce these changes. On the basis of these and of other observations, the author concludes that it is possible that in some latent cases of tuberculosis the irritation produced by roentgenoscopy is sufficient to produce a focal reaction and thus lead to the manifestation of the disease. This assumption seems the more justified when it is considered that exposure to the sun's rays or the irritation produced by parenteral administration of protein is occasionally followed by a first manifestation of pulmonary tuberculosis in apparently healthy persons.

Virchows Archiv f. path. Anat. u. Physiol., Berlin

284: 1-338 (April 14) 1932. Partial Index

Pathologico-Anatomic Observations During Epidemic of Scarlet Fever Combined with Diphtheria. R. Stankievitcz.—p. 1.
Significance of Form of Sella Turcica in Pathogenesis of Genital Atrophy and Obesity. J. Soós.—p. 49.
Traumatic Late Apoplexy. H. Eck—p. 67.
Pathologico-Anatomic Aspects of Cerebral Injuries in Acute Poisoning with Barbital. Else Petri.—p. 84.
Significance of Functional Structure of Heart in Development of Hypertrophy and Dilatation. N. A. Podkaminsky.—p. 92.
*Polypous, Malignant, Metastasizing Endocardial Tumors and Tumor-like Thrombi of Left Auricle. W. Muller.—p. 105.
Pathology of Endocarditis Pulmonalis. H. Oelmeyer.—p. 120.
Various Forms of Primary Disease of Pulmonary Artery. H. Bredt. —p. 126.
Animal Experiments on Arteriosclerosis with Especial Consideration of Sclerosis of Coronary Arteries. E. Pfleiderer.—p. 154.
Significance of Arteriosclerosis for Development of Uremic Necroses. W. Würth.—p. 175.
*Spreading and Course of Lobar Pneumonia. H. Heinrichs.—p. 187.

Metastasizing Endocardial Tumors of Left Auricle.—Müller describes four cases of so-called myxomas of the left auricle, which macroscopically showed certain similarities but the microscopic examination of which revealed entirely different structures. In the first case there existed a malignant growth with metastases; in the second instance the tumor showed the aspects of a myxoma; in the third case there existed a thrombus, and in the fourth case a portion of a sarcoma of the cardiac wall had grown into the auricle. All cases showed their own typical structure and revealed no transition stages from thrombus to tumor. On the other hand, the possibility of a tumor-like transformation of thrombi cannot be entirely excluded. The changing pressure and blood current in the left auricle exert a considerable influence on the macroscopic as well as on the microscopic formation of the growths.

Course of Lobar Pneumonia.—Heinrichs found that lobar pneumonia spreads not merely by the lymphatic route but also by direct continuity. Spreading by the bronchial route produces primarily metastases in other lobes. Working independently of Löschke, the author reached about the same conclusions. In the alveoli in the beginning stage of lobar pneumonia there is edema with bacteria, and a congestion of the alveolar vessels. This hyperemia increases with the further exudation of leukocytes and of alveolar epithelium. When the alveolus is filled with cells, the blood vessels become empty. With increased exudation of fibrin and the disappearance of leukocytes, the blood slowly returns to the vessels, so that in the stage when the fibrin shrinks the capillaries again become distended. In this stage diapedesis hemorrhages are frequent, whereas in the beginning stage of pneumonia hemorrhages into the alveoli are not the rule. The fibrin is not dissolved, as was formerly believed, by the leukocytes or their ferments, but it shrinks and in the resorption the alveolar epithelium plays an important part. The main function of the leukocytes in the beginning of the disease process is the destruction of the bacteria. The author was not able to corroborate Löschke's differentiation in stages. In none of the thirty-five cases that he observed did the stage of the so-called red hepatization follow the gray hepatization, but he always noted the red hepatization (not really red, but more grayish red) in the beginning.

Wiener Archiv für innere Medizin, Vienna

22: 161-320 (April 15) 1932

*Diagnosis of Abdominal Cysts with Aid of Pneumoperitoneum. R. Boller and R. Pape.—p. 161.
Hemialgia. A. J. Heymanowitsch and G. D. Leschtschenko.—p. 177.
*Clinical Aspects of Systematic Amyloidosis. W. Mollow and Lebell.—p. 205.
*Relations Between Articular Rheumatism and Tuberculosis. W. Loewenstein, A. Strasser and A. Weissmann.—p. 229.
Pulmonary Cancer. D. Sučić.—p. 255.
Influence of Gastric Acidity on Sugar Tolerance Test. R. Boller and K. Überrack.—p. 307.
Test of Function of Liver by Means of Intravenous Administration of Solution of Galactose. S. Pollak.—p. 317.

Diagnosis of Abdominal Cysts with Aid of Pneumoperitoneum.—Boller and Pape describe three cases of cysts in the abdominal cavity. In two instances the otherwise unclear diagnosis was made clear by air inflation. The author considers the absolute rejection of the inflation of the abdominal cavity for diagnostic purposes as not justified. He admits that meteorism and chronic ileus are contraindications but thinks that, if these conditions can be excluded, the inflation with relatively small amounts of gas (from 800 to 1,200 cc.) does not involve greater dangers than an abdominal paracentesis or an artificial pneumothorax. He considers abdominal inflation especially helpful in the differentiation between ascites and cysts or in the detection of their simultaneous existence. If a cyst is present, its puncture is not dangerous, provided it is immediately followed by the operation. As a rule the puncture canal in the wall of the cyst closes again, before the cystic content escapes into the abdominal cavity. The author considers inflation also advisable in cases in which palpation does not reveal the presence of fluid in the abdominal cavity, or when the usual roentgen examination is not sufficiently clear.

Clinical Aspects of Systematic Amyloidosis.—A review of the literature on amyloidosis revealed to Mollow and Lebell that most reports on this disorder were published by pathologists who discussed the pathologic aspects, whereas the clinical picture was given little consideration. They therefore describe the clinical history of a farmer, aged 60, who complained of abdominal pains and constipation. His tongue became enlarged, he had difficulty in swallowing and in speaking, and walking became difficult. During the three months of clinical observation, the changes in the abdomen and in the muscles were especially noticeable. The abdomen was always *meteoristic*, and there was spastic constipation. The musculature showed irregular changes. Whereas the tongue was greatly enlarged and finally revealed superficial ulceration, the other muscles, particularly those of the back and of the legs, were tensely stretched and hypertonic. The protruding muscles gave the man the appearance of an athlete. The hypertonia of the muscles was continuous and not merely a myotonic reaction. On the skin small, soft nodules were noticeable, which gave the skin an uneven appearance. The hypertonia of the muscles increased and the abdominal pains persisted, particularly on the left side. Gradually the symptoms of a cardiac weakness developed and the patient died as a result of myocarditis. The diagnosis was not definite until after the postmortem histologic examination. The histologic report revealed that the amyloid was not deposited in the organs in which it is usually found, but rather in the muscles. On the basis of this characteristic the authors feel justified in classifying this case with the systematic amyloidosis as described by Lubarsch. The peculiarities of this form of amyloidosis are (1) the absence of the cause to which amyloidosis is usually ascribed; (2) the absence of amyloid deposits in organs that are usually involved, and (3) the different behavior toward the usual staining methods for amyloid. The etiology of this form of amyloidosis is still not definitely established, but the authors think that it is the result of a disturbance in the protein metabolism.

Relations Between Articular Rheumatism and Tuberculosis.—Loewenstein and his associates call attention to the fact that studies on the etiology of acute articular rheumatism have repeatedly pointed toward tuberculosis. In recent years, Reitter and E. Löwenstein have considered acute articular rheumatism as a manifestation of the action of the tubercle bacillus, because they noted a tubercle bacillemia in a considerable number of such cases.. Statistical investigations on the frequency of the concurrence of articular rheumatism with tuberculous disorders, however, indicated a great rarity of such a concurrence, namely, only 1 per cent. Blood cultures that were made by E. Löwenstein in fifty-one cases of articular rheumatism which were under the authors' care, revealed a tubercle bacillemia in 34.4 per cent of the cases, but the authors reason that the concurrence of tubercle bacillemia and of articular rheumatism does not necessarily indicate a causal connection between the two, and the critical evaluation of their material does not justify the assumption of a causal relation. They think that infectious arthritis develops on the basis of a sensitized mesenchyme and that the sensitization in turn may have been produced by any infection, including tuberculosis.

Zentralblatt für Chirurgie, Leipzig

59: 1089-1136 (April 30) 1932. Partial Index

*Does Hormone of Thyroid Protect Against Thrombosis and Embolism? C. Atanasof.—p. 1090.
*Ova of Tapeworm as Cause of Periproctitic Abscess. P. Rosenbaum. —p. 1093.
Helpful Technical Maneuver in Endless Probing. A. Kummant.—p. 1096.
Time of Operative Intervention in Pneumococcic Peritonitis in Children. W. Obadalek.—p. 1101.
Ambulatory Treatment of Hydrocele According to Kirschner's Method. K. Kettel.—p. 1103.
Hidden Abscesses of Both Tonsils as Cause of Streptococcic Peritonitis Following Appendectomy. E. Sereghy.—p. 1108.

Does Hormone of Thyroid Protect Against Thrombosis and Embolism?—Atanasof cites evidence against the assertion that thrombosis and embolism are never observed following operative interventions for exophthalmic goiter and he points out that his observations on fatal thromboses and embolisms following goiter operations also prove that the thyroid hormone is of no practical value for the prophylaxis of postoperative thrombosis and embolism. That thromboses and embolisms are comparatively rare after interventions for exophthalmic and other goiters, he thinks due to another factor than the thyroidal hormone, for they are rare after all operations on the neck and head. For this there is as yet no satisfactory explanation, but the problems of thrombosis and embolism, the pathogenesis as well as the prophylaxis, are likewise still unsolved and have to be further investigated.

Ova of Tapeworm as Cause of Periproctitic Abscess.—Rosenbaum relates the clinical history of a woman, aged 30. On the basis of the first examination, the condition was diagnosed as a periproctitic abscess with an infiltration above it. To be sure, the characteristic aspects of an acute inflammation and of disintegration were absent, and the pus revealed the typical behavior of neither an acute nor a chronic abscess. The upper infiltration had no connection with the abscess. There was no increase in temperature, and the peculiar clinical aspects induced the author to have a part of the abscess wall examined microscopically. The presence in the tissue of ova of taenia caused surprise, as it could not be readily explained how the ova had reached those tissues. Since the ova have no motility of their own and a penetration of the mucosa of the colon can be excluded, they may have reached there by way of an incomplete fistula that had healed in the meantime. Another possibility is that, as a result of an accidental injury of the mucosa, they were pressed into the tissue and, because they were laden with infective material, they did not heal in but caused infiltration and abscess formation. Microscopic examination revealed that besides entirely intact eggs there were also some which showed the aspects of necrosis. This indicates that at least a part of the eggs were destroyed by the changes in the biologic conditions. Thus it may be assumed with considerable certainty that the ova, which were laden with infectious although not highly virulent material, caused a slow infiltration and abscess formation. This mode of pathogenesis of a periproctitic abscess has a certain resemblance to that of a tuberculous periproctitis, the more so because microscopic examination revealed giant cells and epithelioid cells. In the conclusion the author advises that for therapeutic as well as for scientific reasons the abscess wall should be excised, whenever periproctitic suppurations show unusual clinical aspects, for thus not only the largest portion of the parasitic ova are removed but material is obtained for microscopic examination.

Zentralblatt für Gynäkologie, Leipzig

56: 1025-1088 (April 23) 1932. Partial Index

Clinical Significance of Uterine Epithelial Proliferations of Hypophyseal Origin. J. Hofbauer.—p. 1026.
*Necessity for Caution in Therapeutic Use of Preparations of Anterior Lobe of Hypophysis. J. Hofbauer.—p. 1032.
Granulosa Cell Tumor: Case. H. Dworzak.—p. 1033.
Problem of Interruption of Pregnancy in Addison's Disease. M. Addison.—p. 1039.
*Ulcer Following Injury with Ball Forceps. H. Hinselmann.—p. 1042.
Glycogen Content of Myomatous Tumors of Uterus. E. Petrowa. —p. 1045.

Therapeutic Use of Preparations of Anterior Lobe of Hypophysis.—Hofbauer directs attention to the dangers involved in medication with preparations of the anterior lobe of the hypophysis. In guinea-pigs, in which both ovaries had been removed and which then were treated by intraperitoneal injection of hypophyseal extracts or by transplantation of parts of the hypophysis, he noted a considerable enlargement of the vital organs, especially of the heart and kidneys, which had grown to about twice their normal size. The enlargement of the liver and of the spleen was less noticeable. He advises that if a prolonged medication with the hormone of the anterior hypophysis is necessary one should be careful with the hypophyseal preparations that contain the growth hormone, especially in cases presenting deficient ovarian action. The hypophyseal preparation obtained from the urine during pregnancy supposedly does not contain the growth hormone and would therefore be less dangerous for the heart and kidneys. On the other hand, it is also understandable that the preparation that does not contain the growth hormone will be useless to influence genital hypoplasia.

Ulcer Following Injury with Ball Forceps.—Hinselmann points out that in the differential diagnosis of circumscribed ulcers of the cervix uteri a possibility should receive attention that formerly has not been considered. He observed a cervical ulcer in a woman in whom the uterus had been curetted following an abortion. The negativity of the Wassermann reaction excluded the possibility of a primary syphilitic lesion and the surface of the ulceration did not indicate a carcinomatous lesion. Another case of a cervical ulceration came under the author's observation, and the ulcer was excised and subjected to histologic examination. Thus it was found that the ulceration was not carcinomatous. In this instance no other etiology was possible but that the torpid ulcer was the result of an injury caused by the ball forceps that had been used in this case. Consequently the same origin is assumed for the other case. Examinations in numerous cases convinced the author that such cases are comparatively rare, but he thinks that the possibility of this etiology should be considered in cases of cervical ulcers.

56: 1089-1136 (April 30) 1932

Malformation of Urinary Bladder in Two Fetuses. R. Meyer.—p. 1090.
*Treatment of Vesicovaginal Fistula by Laparotomy. E. Vogt.—p. 1105.
Traumatic Rupture of Bladder During Puerperium. F. C. van Tongeren.—p. 1109.
Vaginal Calculus in Case of Vesicovaginal Fistula. P. Esau.—p. 1110.
Therapy of Ureteral Fistula. W. Sigwart.—p. 1113.
Primary Ureteral Carcinoma. E. Navratil.—p. 1116.
*Differential Diagnosis Between Appendicitis and Painful Ureteral Stasis or Pyelitis During Gravidity. P. Schumacher.—p. 1120.

Treatment of Vesicovaginal Fistula by Laparotomy.—Vogt first relates a clinical history which indicates that under certain conditions a laparotomy may be employed with success for the treatment of a vesicovaginal fistula, especially in cases in which the uterus has been extirpated and the vaginal route is no longer passable. This case also shows that during the after-treatment the permanent catheter can be dispensed with, for the catheter was removed on the sixth day following the operation. The second case described by the author is significant because it shows that suture of the bladder can be tried even when an ovarian carcinoma has spread to the bladder. The preceding roentgen irradiation with the carcinoma dose apparently did not influence the adhesion capacity unfavorably. For the healing process it is particularly important that the suture of the mucous membrane and of the musculature of the bladder is covered extensively with peritoneum that to some degree is still healthy and somewhat movable, so that wide peritoneal surfaces adhere to each other. Only thus is it possible to effect a complete closure of the vesical defect toward the abdominal cavity.

Differential Diagnosis Between Appendicitis and Pyelitis During Gravidity.—Schumacher points out that elimination pyelography has been recommended for differential diagnostic purposes in pregnant women, especially in disorders that are accompanied by signs of peritoneal irritation, such as cases of pyelitis or of the prepyelitic condition of ureteral stasis. These conditions may be mistaken for appendicitis, and those that recommend elimination pyelography for these cases claim that this is the only reliable method to prove that appendicitis is absent and thus prevent a laparotomy, which may prove fatal for the existing pregnancy. The author, however, disagrees with this attitude, for in the course of elimination pyelographies on 450 pregnant women he came to the conclusion that, although intravenous pyelography gives a clear picture of the physiologic and pathologic urinary tract of pregnant women, it does not aid in the differentiation between appendicitis and urinary stasis. The rejection of this diagnostic method the author bases on the following observation: The ureter, the tonus of which is reduced as a result of pregnancy, always appears dilated after the fifth month of pregnancy, as a result of the pressure from the uterus. The degree of dilatation varies, but the right ureter is usually more dilated than the left one, because of the greater uterine pressure on the right side. In the majority of cases the dilatation does not cause the slightest discomfort; but the pyelogram does not indicate this, nor does it reveal whether the urine is infected or not. The author warns that even if the pyelogram reveals considerable stasis of the right ureter, symptoms indicative of appendicitis should not be interpreted hastily as painful urinary stasis, since such a conclusion would involve the danger that an acute appendicitis is overlooked. As the best differential diagnostic method for such cases he recommends ureteral catheterization. Care should be taken that the catheter is pushed at least 20 cm. beyond the ureteral ostium, so that the point of the catheter reaches above the site of compression and into the dilated portion. If the pains disappear after the urine has been discharged by catheterization, the stasis was the cause; but if appendicitis-like symptoms persist after that, operation should not be further postponed. If the urine is infected, the catheterization brings in mild cases usually some relief, but in cases of severe pyelitis the result is not sufficiently prompt to be of differential diagnostic value.

Russkaya Oto-Laryngologiya, Leningrad

24: 429-524 (number 6) 1931

Changes in Organ of Hearing Under Influence of Noise. S. S. Grobshtein and A. V. Kugaro.—p. 429.
State of Organ of Hearing and Upper Respiratory Tract in Machine Department of Volzhsk Power Plants. L. I. Yakub.—p. 450.
"Subjective Auscultation" of Mastoid Process. L. T. Levin.—p. 455.
Inflammation of Middle Ear in Influenza Epidemic of 1927-1928. D. M. Rutenburg.—p. 458.
*Practical Value of Double Rotatory Test ("Otolithic Reaction") in Aviation. M. S. Mikhelovich.—p. 472.
*Friel Ionization with Zinc as Method of Treatment of Chronic Otitis. A. F. Pushkin.—p. 487.
The State of Follicular Apparatus in Lacunar Angina. N. A. Krukov.—p. 500.
Esophagotracheal Fistula with Cancerous Development. M. E. Gindes.—p. 507.
Autohemotherapy in Ozena and Atrophic Rhinitis. V. I. Strelova.—p. 510.

Practical Value of Double Rotatory Test in Aviation.—Mikhelovich states that the "otolithic reaction," first described by Voyachek in 1927, is a modification of the Bárány test. There are two parts to the test: In the first part, the patient sits in a Bárány chair with the head held in a vertical position; then he is rotated ten times in twenty seconds or five times in ten seconds, whereupon he is stopped and the period of the nystagmus is recorded. In the second part, the patient is rotated with the head bent, is stopped, and after a pause of five seconds lifts his head, and without other change in position of the head (1) the duration of the nystagmus and then (2) the various dynamic reactions of the sympathetic system are noted. Reverting to the schools of thought represented by Quix, Magnus and de Klejn, and the experimental results of his own laboratory, Voyachek believes that the movement of the otoliths in the second part of the test has a sensitizing or activating influence on the labyrinthine reaction: (1) The irritation of the nerves of the otolithic apparatus is unspecific and is a mechanical result of the movement of the otoliths at the ends of the nerves of this apparatus; (2) the otolithic apparatus stands in close functional relationship with the system of semicircular canals. Five years' work in the commission appointed to study the criteria in the selection of candidates for the schools of aviation and the physiologic principles underlying such a capacity leads the author to conclude that the otolithic reaction of Voyachek needs further study. The test is an indication of the general condition of the otolithic apparatus and does not isolate specific disturbances of individual canals. Nystagmometry is not the only or the most accurate criterion for aptitude in aviation. The otolithic reaction is not sufficiently accurate nor standardized for use in aptitude tests in aviation. It is true that the test of a good aviator does not depend on some kind of a specialized function of the vestibular apparatus but, rather, on a normal condition of the whole labyrinth. Static sensation is not due to some specialized organ but, rather, to several organs of sensation. One should not speak of "static sensation" but, rather, of the "elements of static sensation." The medical specialist should be instructed in the pathologic and the usual normal variations in the labyrinthine-otolithic reaction.

Friel Ionization with Zinc as Method of Treatment of Chronic Otitis.—Pushkin describes a method of iontotherapy for chronic otitis first recommended by Friel in 1921. The ear, which serves as an electric cell, is filled with a solution consisting of 0.5 per cent zinc sulphate, 5 cc. of glycerin and 100 cc. of distilled water. The positive zinc electrode is placed in this solution through a small ebony funnel (the tip of the electrode just 0.25 cm. above the bottom of the tip of the funnel), and the indifferent negative electrode, insulated in tin foil and well protected, is tied to the shoulder or arm. The electric current is transformed through a rheostat. There must be a regular flow of current with a potential of from 40 to 50 volts and an intensity of not more than 3 milliamperes. Most of the treatments consisted of a current of 2 milliamperes, and the current was applied for from ten to fifteen minutes. The average number of treatments was three. The author treated forty patients this way and concludes that ionization offers the best method for the treatment of the infectious process and that its influence is directly on that process. The action seems due to the nascent state of the medicaments, which come in close contact with the diseased tissue and gradually coagulate it. The action of the ions is specifically on the pathologic tissue and reaches parts of the ear that are inaccessible by other methods of treatment; the electric current at the same time influences the cellular tonicity. This method of treatment is recommended by reason of its rapidity and its efficacy.

Hygiea, Stockholm

94: 209-256 (March 31) 1932

*Atypical Tuberculous Meningitis. P. Butler.—p. 209.

Atypical Tuberculous Meningitis.—In nineteen cases cited by Butler, tuberculous meningitis had at some stage simulated or caused confusion with cerebellar tumor (three patients operated on), cerebral abscess together with chronic otitis (operation), compression myelitis (laminectomy), sarcomatosis of cerebral meninges (puncture of ventricles), acute polyarthritis with transient paralysis of bladder, epidemic meningitis, and poliomyelitis in the preparetic stage. He says that the focal symptoms seem usually to appear after meningeal signs have set in, when diagnosis generally is not difficult, unless the focal symptoms dominate the clinical picture. However, the focal deficiency phenomena may constitute the initial symptoms, and a longer or shorter period may elapse before the symptoms proper of meningitis appear. With a fever-producing tuberculous process in other organs, rapidly supervening focal symptoms from the central nervous system may be the first sign of meningitis. There were instances of meningitis with remissions, in which grave focal lesions disappeared without recurring in the later stage of the disease.

Nordisk Medicinsk Tidskrift, Uppsala

4: 225-240 (April 9) 1932

Aid in Method for Determination of Strength of Cutaneous Capillaries and for Indirect Estimation by Such Determination of Individual Vitamin C Standard. G. F. Göthlin.—p. 225.
*Erythema Nodosum. H. Ernberg.—p. 230.

Erythema Nodosum.—Ernberg studied erythema nodosum and its connection with tuberculosis in more than 200 cases, largely in children. In an unbroken series of thirty-nine closely examined unselected cases of erythema nodosum, all the patients were found to have tuberculous infection, mostly with directly demonstrable tuberculous foci, chiefly in the pulmonary region. His various results lead him to explain erythema nodosum as an autogenous tuberculin reaction of the organism, and he concludes that the condition must practically be regarded as tuberculosis. No examination in cases of erythema nodosum, he says, is complete without roentgen examination. The condition calls for treatment of the tuberculosis, is a signal to search for the source of infection in the patient's environment, and permits study of the course of tuberculosis in certain forms in its earliest stages. The prognosis for tuberculosis with erythema nodosum is, as a rule, good.

Norsk Magasin for Lægevidenskapen, Oslo

93: 353-480 (April) 1932

*Psychic Disturbances in Multiple Sclerosis. H. Sæthre.—p. 353.
Focal Infection: Blood Picture and Sedimentation Reaction in "Rheumatic" Conditions of Muscles and Joints; Bacteriologic and Pathologic-Anatomic Investigation of Foci of Infection, Particularly Tonsillar and Dental. H. Bjørn-Hansen.—p. 378.
*Operative Treatment of Fractures of Diaphysis of Femur: After-Examination. N. H. Brodersen.—p. 403.
Mesenteric Cyst (Sarcoma with Cyst Formation). J. Kaarstad.—p. 418.

Psychic Disturbances in Multiple Sclerosis.—Sæthre reports twelve cases of multiple sclerosis with psychic symptoms. In eight there were grave psychotic changes, in two with marked dementia. The remaining four showed the "common polysclerotic mental state" (Ombredane) characterized by euphoria, slight dementia, marked emotional lability, and sensitive egocentricity. The most important mental disturbances in multiple sclerosis are emotional instability and dementia. The dementia may appear early and without particularly marked neurologic symptoms. In only one case did the psychosis almost entirely disappear.

Operative Treatment of Fractures of Femur.—From his after-examinations in sixteen patients (with seventeen fractures) out of the twenty-eight (with twenty-nine fractures) treated from 1919 to 1929, Brodersen concludes that when in fractures of the diaphysis of the femur other treatment is ineffective (and possibly as the first treatment in complicated fractures) osteosynthesis according to Lane gives good anatomic and functional results. The drawbacks otherwise noted after osteosynthesis (osteitis, pseudo-arthroses, delayed consolidation) seem to be unimportant in fractures of the femur.

93: 1-342 (April) 1932. Supplement

*Surgical Conditions of Pancreas. O. Usland.—p. 1.

Surgical Conditions of Pancreas.—On the basis of the cases of pancreatic disorders and pancreatic complications seen among the 3,000 patients treated by him from 1924 to 1930 and of the Norwegian literature on pancreatic diseases, Usland discusses pancreatic diseases in Norway, their clinical symptoms, diagnosis and treatment, with constant comparison with experiences from other countries.

Svenska Läkaresällskapets Handlingar, Stockholm

58: 1-72, 1932

*Steam Disinfection: 1. Investigations on Resistance of Spores of Anaerobic Bacteria to Heating in Moist Heat. R. Bergman.—p. 1.

Steam Disinfection.—Bergman tabulates the resistance values obtained in resistance tests of spores of pathogenic anaerobic bacteria suspended in ordinary bouillon. The values were uniform, "skips" were rare, and the "dormancy" phenomenon was not exhibited. Comparison between his values and those of other investigators support the view that the nature of the suspension medium is of importance, higher values being obtained in the cultures richer in organic substances, especially in brain mediums. The varying results are ascribed to a protective action (as isolation from the steam) by certain substrates. The density of the spores seems to be of little significance, but exposure of the spores to airing, washing and the like plays an important part. Of the two factors in the thermal effect, the temperature to which the spores are exposed and the duration of the exposure, the former dominates. The age of the spores seems to be of slight importance, although younger spores are more resistant. The addition of dextrose or sodium chloride does not increase the resistance. The estimated resistance values for bacteria believed to be the most resistant of all pathogenic micro-organisms indicate that in practical sterilization a low-pressure steam (1.3 atmospheres) is applicable, but these values cannot be made the basis for practical work until the influence of the milieu factors are explained.

Ugeskrift for Læger, Copenhagen

94: 399-428 (April 21) 1932

Otitis in Practice. C. Skovmand.—p. 399.
*Alimentary Hyperglycemia in Certain Infectious Diseases. A. Brems.—p. 403.
Injury to Health in Work with Melted Pitch. S. V. Gudjonsson.—p. 407.
*Diverticulum of Esophagus: Three Cases. J. Nordentoft.—p. 409.
Stomach Lavage in Children with Surgical Tuberculosis. A. Dorph-Petersen.—p. 412.

Alimentary Hyperglycemia in Acute Infectious Diseases.—Brems says that the oral administration of about 1 Gm. of dextrose per kilogram of body weight in patients with infectious mononucleosis, paratyphoid, undulant fever, and epidemic hepatitis was frequently followed in the acute stage by an abnormally high rise and a retarded fall in blood sugar values, believed to be a sign of universal organic intoxication. In some instances with pronounced abnormal reaction the temperature was normal. Glycosuria was often absent, even when the blood sugar rose to 200 mg. per hundred cubic centimeters or considerably more; this is ascribed to injury of the renal parenchyma. Moderately increased fasting blood sugar was occasionally seen in cases of epidemic hepatitis and undulant fever.

Diverticulum of Esophagus.—In Nordentoft's first patient, a man, aged 68, who had extreme difficulty in swallowing, roentgen examination revealed a pulsion or Zenker's diverticulum. Radical excision in one sitting with primary suture resulted in immediate uncomplicated recovery, continuing four years to date. In two other cases of lower and practically inaccessible diverticula, treatment with liquid or semiliquid diet has been helpful.

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PROGRESS IN THE NUTRITION OF INFANTS

CHAIRMAN'S ADDRESS

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Successful artificial feeding of infants is a recent accomplishment. I can remember as a student attending the lectures on infant feeding, the blackboard generously covered with mathematical formulas. Toward the end of the last lecture something awakened me and I heard the professor's peroration: "You will find many babies who will not thrive on these formulae and you will have to try one food after another until you find one that the baby can digest."

During the Greek and Roman period, mothers nursed their babies or had slaves wetnurse them. Galen prescribed a panada of bread soaked in broth of flesh or legumes, but he alone of the ancient writers seems to have mentioned the subject of artificial feeding, although Hippocrates devoted twelve of his aphorisms to the tonsils, Celsus gave directions for their removal and even that modern subject, child psychology, was discussed.

Throughout the middle ages the child who was "dry" or "hand" fed stood little change of surviving. Pap and panada came to be quite extensively used, but chiefly as a complemental food and during weaning.

A seer centuries in advance of his time was Simon de Vallembert, 1565. He recommended "bread or flour, which may be first dried in the oven, grated, cooked in broth, with milk of the cow or goat, and finally butter or egg yolk may be added to make it more nutritious, and honey to guard against constipation." It is conceivable that, had he hit on suitable proportions, this mixture might have been a satisfactory food even earlier than at 3 months, when he recommended its use. Unfortunately his directions were not widely followed, though similar mixtures continued in use, and in 1813 James Hamilton wrote, "Pap and panada be now almost universally used for the first food of infants and as a substitute for mother's milk." These were mixtures of bread, flour and cereals cooked in broth, wine or beer, with additions at times of butter, egg, brown or white sugar, honey and cow's or goat's milk.

In the days when the formula was diluted with water from the Thames, when the cow's horn was the nursing bottle, with a cloth, sponge or leather nipple furnishing the mouthpiece, and when premasticating the panada was the custom, hand feeding was necessarily most hazardous. The discovery of the rôle of bacteria in the pathogenesis of disease, with the resultant methods of sterilization, pasteurization and refrigeration, was indispensable as a foundation on which a science of artificial feeding could be built.

The beginnings of the structure were the analysis of milk and the attempt to approximate, by modification, the composition of breast milk. Biedert began this work in 1869; John F. Meigs and Thomas Rotch in this country elaborated it in the development of the percentage method of feeding.

Abraham Jacobi, the founder of this section, in advocating simple dilutions of boiled milk with sugar additions, widely followed here and in Germany, developed the most practical and certainly the simplest method of his time.

It is only in the last three decades that progress in this science has been rapid. Rubner and Heubner worked out the child's caloric requirements; Czerny and Keller investigated the effect of and damage done by excessive amounts of various elements, and Finkelstein and Meyer classified nutritional disorders. Feeding became the topic of conversation wherever two or more pediatricians were gathered together and the bone of contention at larger meetings. I can truthfully say that the science of artificial nutrition has developed within the memory of many here today. Now how far has this science progressed and how successful has the pediatrician become in its application?

Until recently, the mortality of artificially fed infants has been appalling. Marriman, in the early part of the nineteenth century, said that hand-feeding proved fatal in "seven out of eight of these miserable sufferers." The death rate in the foundling and infant asylums was particularly terrible. In Rouen, from 1763 to 1765, only 3 of 132 hand-fed infants survived; in Dublin, of 10,000 admissions from 1775 to 1796, less than 1 per cent lived; the Paris Foundlings Hospital furnished a mortality of 85 per cent of 32,000 admitted; London institutions, up to 1767, when parliament required infants to be sent to foster parents in the country, reported 2,690 deaths in 2,800 annual admissions. And until the last decade these distressing statistics were not greatly improved on in the orphanage.

Brennemann said that in his early days of practice the mortality in a foundling's home where he was an attendant was nearer 100 than 50 per cent. In the Berlin Waisenhaus and Kinderasyl when Finkelstein took charge, conditions were equally bad. In 1913, when I had the privilege of six months' study there, we were immensely proud of a reduction to 13 per cent. About forty wetnurses were then employed to furnish "nature's specific food" to premature infants and in

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difficult cases. Mortality figures since then tell a remarkable story: in 1920, 12.9 per cent; in 1923, 9.3 per cent; in 1925, 4.3 per cent, and in 1929, 3 per cent. Last year, with only one wetnurse remaining in the institution, the death rate was 2.5 per cent. The material throughout the period remained unchanged.

Compare this figure, 2.5 per cent, with the lowest mortality anywhere under most favorable conditions. Realize that this result was achieved entirely by artificial feeding, in a foundlings' hospital with hundreds of admissions annually. Go there and see the charts showing ideal gains in weight in almost every case and the vigorous healthy babies with the rosy glow of health shining through their firm tissues, and you will agree with me when I state with assurance: All major problems of artificial nutrition have now been solved. The results, under most skilful direction, closely approximate, perhaps equal, those of successful breast feeding, not only in gain in weight, tissue turgor, color and vigor, but in resistance to and recovery from infection.

In reviewing the journey made from almost complete failure to almost complete success in artificial feeding, I wish to touch on some of the salient features of the more recent progress and comment on certain phases in the present teaching of the German school and current practice in the Berlin Waisenhaus.

In this institution, Heinrich Finkelstein, L. F. Meyer and their associates worked out many principles and practical measures of the greatest value. Pediatricians in every part of the world, including more than a score of the now accepted leaders in this country, will ever hold in grateful memory their kindly reception as students within its walls and the instruction so graciously and freely given by these fine scientists and capable, unselfish teachers.

ESSENTIAL FEATURES OF PROBLEM

The essential points to be stressed as a basis for discussion may be summarized as follows:

1. The casein curd of cow's milk must be modified. Halfway measures have been discarded. Boiling and acidification do this equally satisfactorily, and the question of the buffer substance is of considerably less interest than formerly.

2. The discovery of the accessory food factors not only did away with rickets, its resultant deformities and the more fatal tetany, with scurvy, xerophthalmia, etc., *through the list of avitaminoses, but incidentally* improved the infant's resistance to infection.

To which vitamins gratitude is due for this greater immunity is still a matter of some dispute and much investigation. In all probability, each has a part. Certainly, a marked deficiency of any one of them tends to weaken the resistance of the child, and fortunately today it is not difficult to supply all in sufficient quantity.

3. It has at last been recognized that hunger is the greatest danger of the infant and the younger the child the greater is that danger. The barley water, albumin water and skimmed milk diets of the past have wrecked more of those starting life's journey than any other one factor, except perhaps pathogenic bacteria.

4. The early broadening of the diet is now generally accepted. Recent years have seen egg yolk, cereals, cod liver oil, vegetables, fruit pulp, meat, fish, fowl and liver given earlier and earlier without resulting disturbance. A timely supply of a generous variety of minerals, fats, vitamins and proteins, from which the cell may choose those nearest its metabolistic heart's desire, is greatly lessening nutritional anemias and building generally more firm, resistant tissues.

5. Pediatricians are convalescing from the stage of one-sided diets, and are learning to construct the feeding which offers the best quota of all necessary elements. In general, the best guide to the optimal proportions is that of breast milk, in which protein, fat and carbohydrate are in the percentages of 1, 3.5 and 7. Meyer has said that the most important relationship is the 1 : 2 ratio between fat and carbohydrate; that the failure of every effort with straight cow's milk has been solely due to its 1 : 1 ratio. He said: "The rapidly burning carbohydrate and slowly burning fat have important inter-relations in metabolism and play opposite rôles, somewhat similar to the calcium and potassium interplay in the mineral metabolism. Fat restricts, carbohydrate favors water retention; fat makes water stable, carbohydrate water-labile additions to the organism. Fat increases immunity and carbohydrate in too great proportion decreases it." The fat can be increased if the 1 : 2 proportion with the carbohydrates is maintained. Early additions of browned butter are tolerated better than cream, and this with egg yolk and cod liver oil are most valuable in producing the firm fat cushions in the cheeks, buttocks, legs, arms and chest, which furnish nourishment reserve and protect against change in temperature. The increase or decrease of this fat cushion is the most delicate index that one has of the nutritional condition of the child.

6. There is a growing tendency to reduce the amount of milk in infant feeding. Moll believes there is a milk injury due to excessive amounts and characterized by paleness and an enlarged liver and spleen. Alfred Hess has stated that children develop more rickets on a quart than on a pint of milk daily. The German school sets the limit of 0.5 liter as the total for any one day. While I share the prevalent dislike for rigid laws, in my feeding practice during the past two years I have rarely exceeded this amount. I am convinced that the result has been beneficial and that the method presents no difficulties. It, at least, necessitates earlier addition of other foods, encouraging greater variety.

7. Limitation of the total quantity of fluid deserves consideration. Except during periods of excessive heat or during fever or watery diarrhea, the infant does well on one fifth of its body weight of fluid daily during the first weeks, one seventh at 6 months, and one eighth up to the first year. If fluids are kept near this level, less vomiting occurs, the bottle is more readily emptied, the bed and clothing are not so constantly water-soaked, the insulation against changes in surrounding temperature is consequently better and the skin is less irritated.

INSTITUTIONAL DIARRHEA

"Man does not live by bread alone" nor does the nursling by its milk formula. Infants in institutions are prone to diarrhea, just as in private homes the tendency is to a beneficial constipation. Within from one to three weeks after entering the hospitals, regardless of the kind of nourishment, even breast milk, a large percentage of infants develop loose stools. The younger they are, the more frequently this occurs. In the Waisenhaus, in a series of 443 case studies, this primary diarrhea developed in 99 per cent of those admitted in the first month, in 70 per cent of those up to 6 months of age and in 33.3 per cent of those from

10 to 12 months old. Diarrhea stopped gain in weight, weakened the resistance of the child and laid the foundation for the dyspepsias, intoxications and atrophies which often promptly resulted. Infections following these added the finishing touch to that clinical picture known as *Hospitalismus.* This syndrome has been the rock on which institutional care of young infants has foundered. It has been generally attributed to either enteral or parenteral infection, and elaborate systems of isolation, box wards and sterilization of all materials touching the child have been instituted without much success.

The mistake which long delayed the solving of the problem was too frequent, too great and too long-continued reduction in diet. Most initial diarrheas are monosymptomatic affairs which, like the diarrheas often seen in breast-fed infants, clear up in two weeks on any diet covering nutritional needs; some children gain during the disturbance. The food may often need to be increased to care for the "inner hunger" caused by decreased absorption from too rapid peristalsis. Since ample feedings have been maintained, in only a small percentage of cases does the initial diarrhea drift over into the more severe polysymptomatic type with fever, vomiting and loss of weight. Even in such cases, the tea-with-saccharin period is reduced to eight to twelve hours, followed by ten feedings of 10 cc. of protein milk with 6 per cent carbohydrate addition. This is increased daily by 10 cc. at each feeding, and the nutritional needs are fully covered by the eighth day, at the latest, regardless of the condition of the stools. This treatment controlled the death rate and damage effected by diarrheas. Nevertheless, this institutional diarrhea appeared in almost all the newly admitted infants.

An illuminating research by Meyer and Jahr[1] was under way during my last visit; it is to be published shortly and Professor Meyer has sent me the findings to be reported here.

Believing the diarrhea to be caused by infection from bacteria swarming in the milieu of the hospital ward, an infant on admission was given to one of their most experienced nurses to be cared for in her room in the nurse's home. These special nurses were kept away from the wards. Even when the attendant returned to part-time duty in a ward where the disturbance existed, no diarrhea developed in the isolated baby. These infants were later placed in a ward but given special day and night care by one skilful nurse. None developed the diarrhea.

When children already suffering from the disorder were given this expert care, the stools improved at once and within three to four days became normal. Since there was no change in the feeding, the cure is solely attributable to the perfection and artistry of the nursing. It was found that the best nurses could "special" two babies and keep them free from the institutional diarrhea, but when three or more were placed under the care of a single nurse, mild cases began to appear.

This experiment repeated many times over a two-year period has convinced the observers that although parenteral and enteral infections resulting in diarrhea do occur, the determining factor in the majority of cases is the nervous and psychic trauma incident to life in the hospital ward. Recent studies have revealed that the total sleep of ward children is much less than of those in private homes. Every one knows that a person digests his food poorly if he is harassed and worried.

Pavlov and his students have called attention to the effect of even slight irritants on gastric motility and secretion of the intestinal glands. The life of the infant in the ward is made up of just such irritations: The changes of nurses, the physician's rounds, the taking of the temperature, the sudden movements of the hurried nurse in changing, bathing and weighing the baby, and the hasty movements in picking it up and laying it down shock and frighten the infant. To all these irritations, because of its very unstable autonomic nervous system, the infant responds excessively, and disturbed function and diarrhea result.

If one accepts these conclusions, as I think one must, they have wide applications, not only to diarrheas, but to vomiting and colic, and not only in institutional wards but in private homes, where too numerous, over-anxious, perhaps neurotic attendants supply the irritation. If the well child is so affected, how much more is the sick infant.

The remedy lies in the perfection of the nursing art, which throws about the infant, as Jahr has said, "The atmosphere of rest and well being, which pays attention to the need of sleep, regulates the nursing intervals and the quantity of food to the individual, and reduces disturbing and irritating factors to a minimum."

When Abraham Jacobi made his great plea for breast feeding in his presidential address before the American Medical Association, in 1912, his reason was obvious, for he cited a mortality rate of 6.98 per cent among breast-fed infants versus 19.75 per cent among those exclusively fed on the bottle. Sedgwick's crusade for maternal nursing five years later was more than justified by the summer peak in the infant mortality curve. Both reasons have largely disappeared in the progress of contemporary science. Modern conditions have changed the physical life of primitive woman to one that is largely mental and emotional, and the mother today is rarely of the contented bovine variety. In spite of the efforts of the pediatrician the number who nurse their babies is steadily diminishing.

I do not believe that we are likely to improve on "nature's specific food" as Brennemann termed mother's milk. I believe it to be of especial value in establishing the best bacterial flora in the intestine during the first days of life. But granted a skilled pediatrician to prescribe and an intelligent mother to prepare the formulas, I think that one's conscience need trouble one less than heretofore if the mother with sore nipples or an inadequate supply of milk is relieved from a long-continued, unhappy effort to supply a portion of her baby's food.

Human Factor in Infantile Paralysis.—One of the most striking features of the infantile paralysis people is the Mongoloid trend in the palpebral fissure and the not infrequent presence of an epicanthal fold. The latter character, so rarely found in the Caucasian race, appears more often than among the controls. But far more common, indeed almost universally so, is the peculiar smooth downward curving slant of the inner half of the arc of the upper eyelid. This feature is present whether or not the inner canthus is at a definitely lower level than the outer. The latter arrangement produces the well defined slant, downward and inward, of the whole eye slit. This feature may often be present in the poliomyelitis people but not by any means in all cases.—Draper, George: The Nature of the Human Factor in Infantile Paralysis, *Am. J. M. Sc.* **184**:115 (July) 1932.

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[1] Meyer, L. F., and Jahr, J.: Ueber initiale Diarrhöen im Säuglingsalter, Gesundhfürs. f. d. Kindesalt. 7:1 (Feb.) 1932.

ACUTE INTESTINAL OBSTRUCTION

DUE TO MESENTERIC DEFECTS REQUIRING MASSIVE RESECTION

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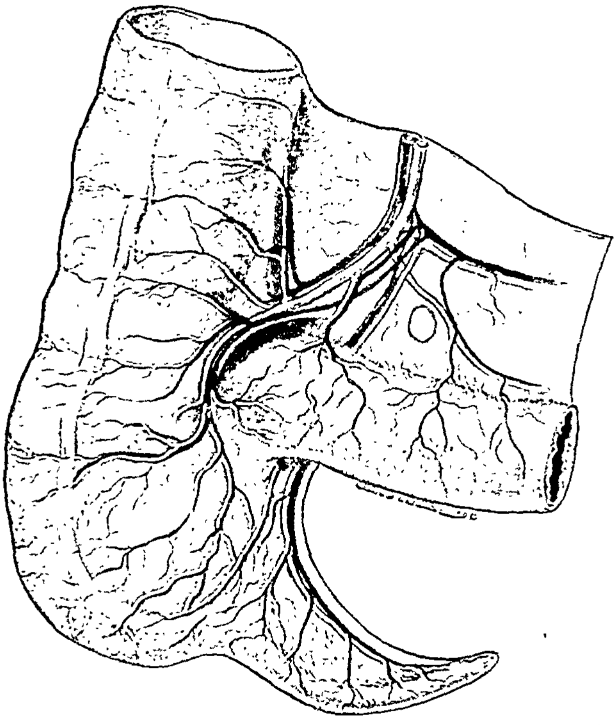
The mesentery is infrequently the site of departures from the normal to the extent that there is an interference with the physiologic functions of the intestine. And it is so peculiarly constructed that an adaptation to change in the intestine may be effected without embarrassment to normal functions. Since the mesentery is the structure supporting the blood, lymph and nerve supply to the intestine, it would appear that one should frequently encounter conditions within the mesentery requiring surgical intervention, but this is not the case. Most of the acquired changes within the mesentery have their origin in inflammatory processes, and unless there is a complete interruption to the circulation, as in mesenteric vascular occlusion, surgical intervention is rarely indicated. Abdominal infections extending into the mesenteric lymph glands and postperitoneal lymphadenitis developing from other sources seldom demand anything more than simple drainage, as the circulation to the intestine remains intact. Neoplasms may, and frequently do, involve the mesentery, but in a majority of instances, a radical surgical procedure is contraindicated. Cysts and other tumors developing in this region may require radical surgical measures, but they are rare. Adhesions, always to be considered as of inflammatory origin, frequently demand operation for the relief from pain and obstruction, but they can scarcely be looked on as inherent defects of the mesentery. Trauma of the abdomen may rupture mesenteric vessels or separate the intestine from its mesentery, causing severe hemorrhage, or it may produce a wound in the mesentery which will allow coils of intestine to pass through, and, later, to become strangulated.

Congenital defects do occur. The mesentery may be excessively long, or, on the contrary, too short; sections may be missing, or there may be anomalous developments in the arrangement of the blood supply. The translucent spaces may be actual openings in the mesentery. Therefore, a hole appears within an anastomotic loop, and it may permit a coil of intestine to pass through. Intestinal obstruction caused by the passage of a loop of small bowel through this abnormal opening in the mesentery is probably the rarest of all factors responsible for intestinal obstruction, and the infrequency of this condition with a consideration of the extent of its pathologic manifestations prompts me to bring it to your attention.

Brown,[1] in 1920, summarized twenty cases of this malady, and Cutler, in 1925, tabulated data concerning these cases and eight others, two of which were from the surgical clinic of the Children's Hospital, Boston. Elston,[2] in 1926, reported a case in which, "a small ring-like aperture, about the size of a lead pencil," was responsible for the obstruction. His patient recovered after resection of 76 inches (193 cm.) of small intestine. Strangulation began 4 inches (10 cm.) above the ileocecal junction, where the opening was located.

McWorther,[3] in 1928, added the report of a case coming under his observation which is unique in that there was an opening in the mesentery in the middle of the abdomen, through which the two ends of a bifid omentum had fused, producing an obstruction of the jejunum by constriction. His patient recovered following a resection of a portion of the omentum and suturing of the aperture in the mesentery.

Judd,[4] in 1929, added the report of a case in which a mesenteric defect was the cause of an obstruction to the colon. The opening was near the center of the mesentery to the small intestine, and the right section of the colon and the lower part of the ileum had passed through this rent. With Hamaker's [5] case, there are but two cases on record in which obstruction of the large intestine has occurred.



The opening is distal to the terminal small intestinal vessels, but it is proximal to that supplying the ileocecal junction, the appendix and the proximal cecum.

According to Hohlbaum,[6] the hole in the mesentery is usually near the ileocecal region, and this observation has been confirmed by Brown,[1] Cutler,[7] Elston [2] and me, but Judd [4] and McWorther [3] found apertures more centrally located.

Treves has shown, that in addition to certain slit-like holes due to injury, there are congenital defects in the mesentery and he has called attention to the fact that the latter are round; are in the lower ileum; are surrounded by an anastomotic arch between the ileo-colic branch of the superior mesenteric artery and the last of the intestinal arteries; that the area is often the seat of atrophied peritoneum, and that fat, visible blood

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Brown, H. P., Jr.: Intraperitoneal Hernia of the Ileum Through a Mesenteric Defect, Am. J. Surg. **72**: 516, 1920.

[2] Elston, Lynn W.: Intra Abdominal Hernias with Report of a Case, J. Indiana M. A. **19**: 157 (April) 1926.

[3] McWorther: Ends of Omentum Fused Through Opening in Mesentery, S. Clin. North America **8**: 533 (June) 1928.

[4] Judd, J. R.: Mesenteric Defects, Surg., Gynec. & Obst. **48**: 264 (Feb.) 1929.

[5] Hamaker, W. D.: A Unique Case of Bowel Obstruction, J. A. M. A. **62**: 204 (Jan. 17) 1914.

[6] Hohlbaum, abstr. in Heller, E. C.: Defects in Lowest Portion of Ileum Near Ileocaecal Junction, Surg., Gynec. & Obst. (Internat. Abstract Surg.) **31**: 372, 1920.

[7] Cutler, G. D.: Mesenteric Defects, Boston M. & S. J. **192**: 305 (Feb. 12) 1925.

vessels and glands are absent. Herniae of knuckles of gut through this cribriform area of mesentery could occur with comparative ease.[8]

The opening is usually just mesial to the artery supplying the terminal part of the ileum, the appendix and the first portion of the cecum. This accounts for the fact that the terminal part of the ileum and the cecum are not included in the gangrenous process.

Evidences of previous inflammations have been observed by Hohlbaum, as stated by Prutz,[9] but accumulating data discredit inflammation as a frequent cause of this anomaly. Trauma as a possible factor has been noted by Cutler[7] in seven instances in the twenty-eight cases abstracted and tabulated by him, but it was not observed in the three cases subsequently appearing in the literature, namely, those of McWorther (one), Judd (one), Elston (one) and the two herein reported.

In Brown's[1] cases, the edges of the aperture were rough, and there was a history of recent trauma. In a great majority of the other cases the edges of the hole are described as being smooth, suggesting that they have been of long standing. In my two cases, they were smooth and rather hard, both mesenteries being of average thickness and apparently healthy, and the apertures were about 1 cm. in diameter.

Just what mechanism is responsible for the passage of a loop of bowel through this aperture is a matter of conjecture. McWorther[3] recorded the history of attacks of pain and indigestion in his case, and from the nature of the case this is readily appreciated; but in only six of the remaining cases was there a history of previous attacks of pain, and there is nothing in the cases herein reported to indicate that there had been occasions when the intestine had passed into or through this opening. The size and shape of the aperture would almost preclude the possibility of a spontaneous reduction once the bowel had passed through. In most intestinal obstructions due to internal herniation of the bowel through preexisting foramina or into fossae, the amount of intestine involved is limited by the size of the cavity into which it escapes. The same condition does not prevail when the bowel protrudes through a mesenteric defect, and once a loop has been projected through this opening, distention within the loop and peristaltic movement serve to force more and more of the intestine through the opening, only to become strangulated.

The percentage of recoveries has been high when reduction of the bowel could be effected. The age of the patient seems to have little influence on the end-results when resection was necessary; also, the amount of intestine resected does not govern the outcome. Early operation is the only hope the patient has for recovery. Of the known operations, there have been eight resections with four recoveries and thirteen reductions (not including McWorther's[3] case, because the intestine did not pass through the mesentery) with eleven recoveries, and in all twenty-one operations with fifteen recoveries—a mortality, therefore, of 28.5 per cent.

REPORT OF CASES

Case 1.—Mrs. M. F., a widow, white, aged 73, became sick about 6:30 p. m., Sept. 15, 1924, while eating supper. She was in her usual state of health, and suddenly experienced a severe pain in the right side of the abdomen. A physician was called; he thought that she was suffering from an acute attack of gallstones. He administered a hypodermic of morphine, but no relief was obtained and two more doses were similarly administered. The pain was not relieved, and the family physician, who had attended the patient on various occasions for a slight cardiac decompensation, was located. He saw her about 3 a. m. the next day, and was under the impression that she had a mesenteric thrombosis and referred her for treatment. She had become much worse and still complained of severe abdominal pain. She was admitted to the University Hospital, Baltimore, about 4:30 a. m., on September 16. I saw her immediately, and found a greatly distended abdomen, which was very tympanitic. Intestinal patterns were visible over the entire abdomen. The pulse rate was 120; the respirations, 20 and shallow, and there was a subnormal temperature. She had not vomited and experienced no nausea until after admission to the hospital, but she was still complaining of severe pain to the right of the umbilicus. The first impression was that the condition was mesenteric thrombosis; the second, that it was intestinal obstruction.

Immediate operation was advised, and was performed ten hours after the onset of symptoms. Under local infiltration anesthesia (0.5 per cent of procaine hydrochloride), the abdomen was opened through a long left rectus incision. A great quantity of black, distended bowel was seen, and it almost filled the abdomen. Considerable dark fluid escaped. The mass of bowel was lifted out of the abdomen and traced to the obstruction, which was found to be a hole in the mesentery near the ileocecal valve. The strangulated bowel extended to within 2 inches (5 cm.) of the lower limit of the ileum. The gangrenous bowel with its mesentery was resected *en masse*, and a lateral anastomosis, the small bowel to the cecum, was made. The abdomen was closed without drainage. Examination of the specimen showed that the ileum had passed through an opening in the mesentery 1 cm. in diameter. It could not be reduced even after being removed from the patient. The mesentery was split; the edges of the opening were smooth and firm, and the mesentery was of usual thickness. The resected bowel measured between 6 and 7 feet (182 and 212 cm.). The patient gradually came out of shock and made an uneventful recovery.

Case 2.—C. D., a colored man, aged 27, single, was admitted to the Provident Hospital, Baltimore, about 9:30 p. m., Jan. 11, 1929. He had always been healthy, and, except for a gonorrheal infection in 1919 and a small abscess in the region of the anus, there was nothing in the past history worthy of note. He was awakened on the aforementioned date at 3 a. m. by a pain in the umbilical region; soon afterward he took a large dose of epsom salt, and obtained no relief but grew worse. Later in the morning the bowels moved, but the pain was not relieved. He began to vomit about 11 a. m., the vomitus being clear. The pain became more severe, and the abdomen began to distend. A physician was called at 3 p. m., and he advised immediate hospitalization, but the patient delayed entering the hospital until 9 p. m. There was no history of a previous attack. On the patient's admission to the hospital, the abdomen was greatly distended and tender throughout, especially on the right side, extending laterally into the lumbar region, and he was extremely rigid on the entire right side and about the umbilicus. There was a leukocytosis of 18,000 with 80 per cent polymorphonuclears. The urine was normal; the temperature, 97 F., the pulse rate, 110, and the blood pressure 120 systolic and 85 diastolic. The impression gained was that the condition was acute appendicitis with intestinal obstruction.

Immediate operation was advised, and it was performed nineteen hours after the onset of symptoms. With the patient under ether anesthesia, the abdomen was opened through a right rectus incision. It was filled with dark fluid and gangrenous small bowel, which was greatly distended. The dark intestine was lifted out of the abdomen, and the cause of the obstruction sought. It was soon found to be an opening in the mesentery through which the small bowel had passed. Reduction could not be effected. The aperture in the mesentery was about 2 inches mesial to the ileocecal valve. The strangulated bowel and a V-shaped section of the mesentery were resected *en masse*, and an end-to-end anastomosis of the small bowel was effected, a Murphy button being used. The abdomen was closed without drainage. Examination of the specimen showed an opening 1 cm. in diameter in the mesentery to the small intestine, through which 56 inches (142 cm.) of small intestine had protruded. The intestine could not be reduced. The mesentery was split, and the edges of the aperture were found to be smooth and firm and in a mesentery of average thickness. The patient's strength was supported by the intravenous and subcutaneous administration of dextrose and salt solutions. On the fifth, sixth and seventh postoperative days the patient had an intractable diarrhea, but otherwise his recovery was uneventful.

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[8] Treves, in Piersol, G. A.: Human Anatomy, Philadelphia, J. B. Lippincott Company, 1919, p. 1759.

[9] Prutz, W., and Monnier, E.: Die chirurgischen Krankheiten und die Verletzungen des Darmgekröses und der Netze, Stuttgart, Ferdinand Enke, 1913; Deutsche Chirurgie, no. 46 K.

CONCLUSIONS

1. Abnormal openings in the mesentery are rare.
2. They are usually of congenital origin.
3. Injury has not been demonstrated as an etiologic factor in many instances.
4. The openings are most frequently located in the mesentery to the ileum within 2 or 3 inches of its juncture with the cecum.
5. When intestinal obstruction results, massive resections are likely to be required.
6. Early diagnosis of intestinal obstruction and immediate operation will reduce the mortality.

ABSTRACT OF DISCUSSION

Dr. Owen H. Wangensteen, Minneapolis: In dealing surgically with nonviable intestine such as Dr. Edwards has described, one should be guided by three fundamental considerations. The first of these is how much intestine can be safely excised from the nutritional standpoint. The best guides are recorded clinical observations and animal experimentation. Flint came to the conclusion that in the dog one can safely sacrifice about one half of the small intestine. Some dogs withstood, with dietary regulations, excision of 80 per cent of the small intestine. There are a large number of cases recorded in which sacrifice of from one half to two thirds of the small intestine has been well tolerated by man. Adults accommodate themselves much more quickly to an extensive resection of the small intestine than do children. A second important consideration is "How much blood is lost into the infarcted segment?" In evaluating some of the lethal factors in strangulation obstruction, Dr. Horace Scott and I found that the blood loss was frequently very significant. A dog with the veins tied to a segment of intestine about 3 feet in length will die of shock in four or five hours. The other consideration is the question of what is the best manner of dealing surgically with nonviable intestine. Although the mortality in strangulated hernia for the group is not high, the mortality when primary resection is done lies generally between 40 and 50 per cent. Whereas primary resections can be done in dogs with a fair degree of safety for strangulations, recorded experience with primary resection in strangulated hernia stamps the procedure as unsafe. I feel rather strongly that, in the average case in which a few feet of nonviable intestine must be excised, exteriorization and establishment of a complete external fistula followed by secondary anastomosis at an opportune time carries less risk for the patient. In unusual instances necessitating a high fistula or an extraordinary sacrifice of intestine, it is better to assume the risk of primary resection. I will mention a nonoperative method of decompressing the intestine in simple mechanical obstruction. At the University Hospital in the last year, of twelve consecutive cases of adhesive obstruction of an acute nature, nine have been successfully decompressed by nasal catheter suction siphonage without operation. In three instances an enterostomy was also necessary.

Dr. E. D. Martin, New Orleans: Two or three suggestions have occurred to me. First, the diagnosis is rather difficult. I have not had any cases of this particular kind, but I have had a number of strangulations following operations, and a few cases of torsion, but this is a different proposition altogether. When there is no previous history of operation, a rather sudden onset, and increasing symptoms, I think it is time to operate. One loses time by waiting. One should not do as is so frequently done in these days; namely, go to one's laboratory to make a diagnosis. One should use the old-fashioned method and do an exploratory laparotomy. Certainly one does less harm by performing a laparotomy early than by waiting until one has a positive diagnosis. Once the intestine begins to crawl through the mesenteric opening, the peristaltic motion will carry it on, and the longer it stays the more intestine one will have to resect. One should resect all the gangrenous portion and get through as quickly as one can. The amount of intestine to be removed is measured by the amount of gangrene regardless of the rules for safety.

Dr. Harold M. Trusler, Indianapolis: Acute intestinal obstruction constitutes one of the major surgical catastrophes. In the absence of surgical intervention, a fatal outcome is practically certain. With prompt action and proper treatment, the chances of saving a life are exceedingly good. From the very beginning of scientific surgical investigation, the cause of death in ileus has been subjected to much study and speculation. Because of conflict and controversy and discrepancy, much of the early research work has been forgotten or contradicted and discarded, only to be remodeled at a later time and presented again. Far too often the attempt has been made to investigate the subject as a whole as though one should expect to find a single universal cause of death in acute intestinal obstruction. One might just as logically attempt to designate a universal cause of death in acute appendicitis. For the past six years at the Indiana University School of Medicine, Dr. Gatch and I have been investigating this subject. We prefer to classify the many factors that may cause death, placing them in two groups: 1. In simple obstruction in which for any cause there is blocking of the intestinal contents without strangulation of the intestine, the lethal factors are (*a*) dehydration, (*b*) loss of blood chlorides, and (*c*) alkalosis, leading to gastric tetany and, lastly, inanition. 2. In strangulation of the intestine in which the intestinal wall is grossly altered by overdistention or interference with mesenteric circulation, the additional and far more menacing factors are peritonitis, septicemia and toxemia. It is this toxemia which is poorly understood and which has received a tremendous amount of study. Investigations concerning the nature of the toxins are interesting but have thus far added nothing to the saving of lives. We have demonstrated to our own satisfaction that it is unnecessary to assume the production of any mysterious toxin in intestinal obstruction. The contents of normal intestine, either before obstruction occurs or after its release, are as poisonous when injected into the circulation of experimental animals as are the toxins of the obstructed loops. The questions concerning absorption of these toxins under the abnormal conditions of obstruction and strangulation are most baffling. It is quite possible, however, that in this phase of the subject much ado is being made about little. Perhaps this should be considered no more mysterious than the toxemia that results from any acute intestinal infection. Obstruction, then, is another condition which readily becomes fatal only when sufficient insult is added to injury.

Dr. Willard Bartlett, Jr., St. Louis: My father recently made the statement that in all his years of practice of surgery he had never seen a case of intestinal obstruction in the early stages in which the abdomen was flat and only paroxysmal pain was present. In view of the fact that we are getting the class of cases that are very late in their obstruction, we plan to add as little surgical insult to their preexisting injury as possible. As soon as physiologic balance in water and chlorides is restored, we do an enterostomy through a muscle-splitting incision; if the peritoneal fluid is not bloody, we make the incision in the peritoneum only half an inch long, pick up the first distended loop encountered, tack it to the peritoneum to make a water-tight joint, and slip in a guttered rubber tube. No closure is made. The procedure takes about ten minutes and can be done readily under local or preferably spinal anesthesia. I want to call attention to a rather useful procedure in the after-care of this therapeutic fecal fistula. The tube will fall out in four or five days. At the end of ten days, adhesions are dense enough so that one can insert a Pezzer catheter into the intestine and draw its head back against the wall of the intestine and the abdominal wall, making a water-tight joint. It is readily maintained there and may be left in place as long as necessary. During the intervening period when the intestinal contents are draining across the abdominal wall, we have little trouble with the condition of the skin by putting the patient in "colloid" baths two or three times a day and by keeping a paste of egg albumin slightly thickened with flour around the surrounding tissue. We have left a catheter in place for as long as six months. The tube, of course, is clamped off after normal passage is reestablished, but the "safety valve" is maintained for as long as one wants to keep it and the patient goes about his ordinary occupations. We have had to do only one secondary closure in these cases. We have succeeded in closing one without operation that had been kept open for five months continuously.

Dr. C. R. Edwards, Baltimore: I want to emphasize two points. The first is the responsibility that the general practitioner or other physician who first sees the patient has in making a diagnosis of intestinal obstruction, and the second, the responsibility of the general surgeon in handling it.

FURTHER NOTES ON PITUITARY BASOPHILISM

HARVEY CUSHING, M.D.
BOSTON

In a recent paper,[1] twelve examples of a peculiar and clinically unmistakable polyglandular syndrome were reported. The disorder is characterized by a rapidly acquired plethoric adiposity affecting the face, neck and trunk, the extremities being spared. It is associated in women with hypertrichosis and amenorrhea. Other characteristic features are vascular hypertension, purplish striae distensae of the abdomen, and acrocyanosis with cutis marmorata of the extremities. It is often accompanied by hyperglycemia, occasionally by polycythemia, and a peculiar softening of the bones of the skeleton has been commonly found at autopsy. In its extreme forms, the malady has more often been encountered in young adults, and the average duration of life in the fatal cases has been something over five years.

It is not an uncommon syndrome. Numerous typical examples have been reported, the disease in most instances having been ascribed to a primary adrenal disorder for the reason that cortical hyperplasia is a not uncommon postmortem observation. However, in five of the eight cases that had come to autopsy an unsuspected pituitary adenoma was found; and the fact that three of them were unmistakably composed of basophilic elements made it probable, in view of the supposed rarity of adenomas of this type, that the pituitary lesion was the primary cause of the syndrome. This at least was the interpretation put upon the matter, the symptomatic evidences of disordered function of adrenal cortex, of pancreatic islets, of parathyroid glandules and of reproductive glands being looked on as wholly secondary expressions of the general endocrine derangement.

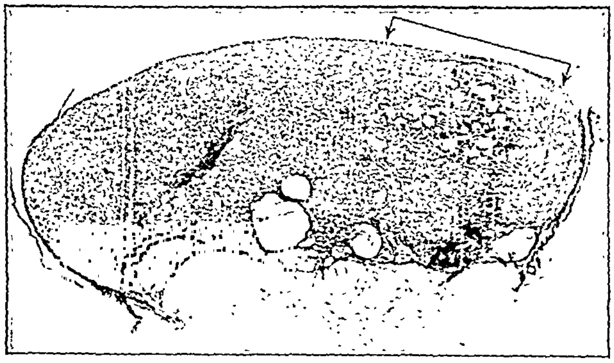

Fig. 1.—Coronal section of basophil adenoma from Dr. Anderson's patient (case 3 of former report).

Since the publication of the preceding paper, new facts have come to hand which seem further to strengthen the views therein expressed. Through the kindness of Dr. Anderson, it has been possible to examine microscopic slides of the pituitary body of case 3, the undifferentiated adenoma being unquestionably of basophilic type. Its size and situation as well as that of the associated adrenal adenoma are shown in figures 1 and 2; and had this been an isolated example of the syndrome in question, it might well enough have been ascribed to either of the tumors. It, however, is the only instance in the series in which dual adenomas were observed. Adenomatous tumefactions of the adrenal cortex, as is well known, are a not uncommon accompaniment of the chromophil adenomas of acromegaly, and no one regards acromegaly as primarily an adrenal disorder.

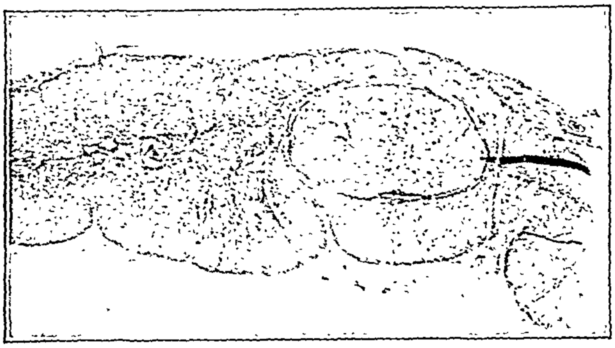

Fig. 2.—Adrenal adenoma from Dr. Anderson's patient.

Dr. Wieth-Pedersen has also forwarded blocks of the tissues from case 12. The pituitary tumor is a large one and, as his description indicated, it is composed of peculiar nongranular elements. This, while disappointing, does not necessarily mean that there may not have been a minute basophilic adenoma somewhere in the periphery of the intracellular mass. To determine this would have necessitated complete serial sections of the entire growth, only a thin slab of which had been preserved.[2]

Information that is of greater value has been acquired from the following additional cases. To the first of them my attention had been called while the original paper was being put together. It would have been included therein had not the photographs of the patient been somewhat unconvincing and had not the pituitary body been described as showing no abnormality. The case was reported by Professor Julius Bauer[3] of Vienna as an example of overfunction of the adrenal system "without anatomical findings," and I have his kind permission briefly to report it again from another angle.

Case 13 [Professor Bauer's patient].—*Rapidly acquired, plethoric obesity with hypertrichosis and amenorrhea. Vascular hypertension. Cutaneous pigmentation. Glycosuria. Clini-*

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[1] Cushing, Harvey: The Basophil Adenomas of the Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism), Bull. Johns Hopkins Hosp. 50: 137-195 (March) 1932.

[2] It has not been possible to get any further information regarding the pituitary body of cases 2 and 4, and since Professor Busse's death the tissues of Dr. Mooser's patient (case 9) have unfortunately been thrown away.

[3] Bauer, Julius: Ueberfunktion des gesamten Nebennierensystems ohne anatomischen Befund, Wien. klin. Wchnschr. 43: 582-586 (May 8) 1930.

cal diagnosis, adrenal tumor; exploratory operation; fatality. Autopsy: ductless glands, apart from ovary, normal. [Predicted basophilic adenoma subsequently verified.]

A married woman, 36 years of age, first came under observation in November, 1929. For eighteen months, striking changes had occured in her appearance. She had gained 33 pounds (15 Kg.) in weight and been obliged to shave because of a growing beard. At the same time there had been loss of hair on the scalp. Menstruation, from the age of 11 always scanty and irregular, had ceased completely for five months. She complained of pains in the lower spine.

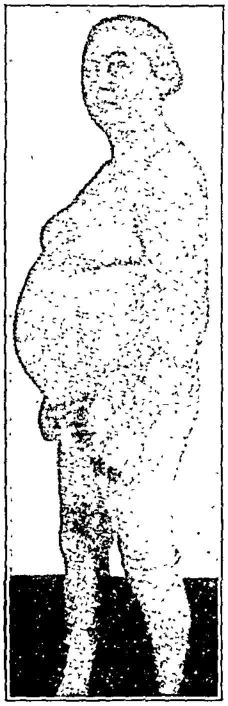

Fig. 3 (case 13).—Adiposity (chiefly abdominous) of Dr. Bauer's patient.

Status Praesens.—The patient was adipose; the height was 155 cm. (5 feet 1 inch), the weight, 71.5 Kg. (157 pounds), and the extremities were disproportionately thin for her face and trunk (fig. 3). The skin was pigmented, coarse, dry and furunculosed, and the extremities showed cutis marmorata. On both sides of the abdomen were prominent veins [sic]. Hypertrichosis was present on lip, chin, cheeks, forearms, sacral region and breasts. There was diffuse alopecia of the scalp. The round "moonface" (fig. 4) was cyanotic and the conjunctivae were injected.

The pulse ran between 104 and 120; the blood pressure varied from 175/110 to 185/120. The urine contained traces of albumin with no demonstrable renal elements; renal function was normal. The blood showed 5,290,000 erythrocytes; hemoglobin, 93 per cent (Sahli); leukocytes, 12,500 with 78 per cent polymorphonuclears. Blood sugar, 116 mg. per cent.; nitrogen, 34 mg. per cent; cholesterol, 195 mg. per cent. A sugar tolerance test showed an exceedingly low threshold to 100 grains of dextrose with prolonged hyperglycemia increasing to 282 mg. per cent in two hours with persisting alimentary glycosuria for forty-eight hours. The basal metabolic rate was + 28.7 per cent repeated.

The case was looked on as an example of overfunction of the adrenal system. Pyelograms were taken and showed an enlarged renal pelvis on the right with normal calices.

On December 16, an exploratory operation disclosed no palpable abnormality of right kidney or ureter. The right ovary was found to be slightly enlarged and was removed. The patient developed erysipelas and died ten days later.

Autopsy (Professor C. Sternberg).—This "gave not the slightest explanation for the peculiar disease." The fat deposits in the abdominal walls, omentum and mesentery were striking. The hypophysis was of normal size and without change. The thyroid gland was not enlarged. Both suprarenal capsules were thin and revealed a small zone of colloid. The pancreas was normal. The left ovary was the size of a cherry, the surface being nodular. The histologic observations were essentially negative, apart from the left ovary, which had been removed at operation. This showed a small faintly yellowish nodule, of hemp-seed size, which was thought possibly to represent aberrant adrenal cortex.[4]

On the basis of this minute lesion in the ovary, taken in conjunction with what information the literature afforded, the case was looked on by the author as an expression of adrenal overfunction. In response to a letter of enquiry, Professor Sternberg was kind enough serially to cut the pituitary body, which fortunately had been preserved. To his expressed surprise, no less than to my gratification, the predicted lesion was disclosed. Though small in size, it shows a typical papillary basophilic adenoma (fig. 5).

Dr. R. C. Moehlig of Detroit has sent me the account of an equally convincing but unreported case in which he had recognized the basophilic nature of the lesion and its probable relation to the syndrome in question before my paper was published. The patient was a woman, aged 44, so that the malady is not restricted, as had been assumed, to comparatively young persons, and there probably are many subvarieties of it depending on the extent to which the subsidiary endocrine organs participate in the symptom complex.

In the following example the symptoms, as in case 5 and case 8 of the previous report, had dated from preadolescence. The lesion has not been histologically verified, but its nature nevertheless may be safely predicted from the general information so far acquired.[5] The case is important in that it is the first (with the possible exception of case 9) in which roentgenologically demonstrable changes in the vertebral bodies have been detected, accounting for the loss of height and the upper thoracic kyphosis. It is also the first case in which an increased elimination of calcium has been detected.

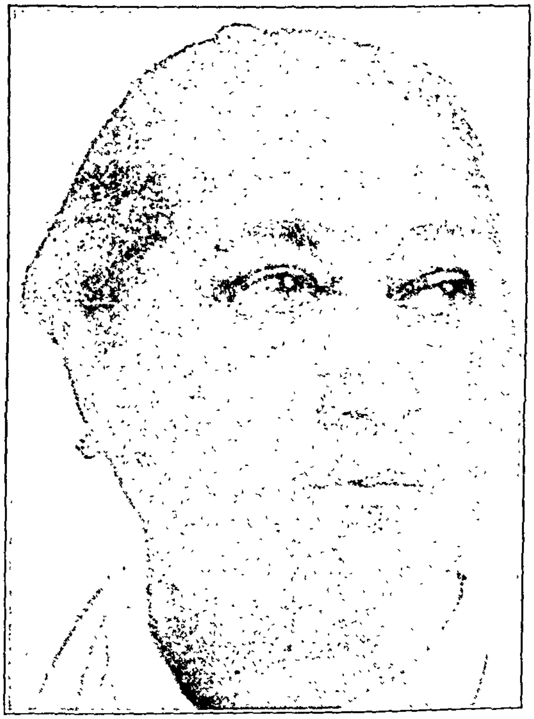

Fig. 4 (case 13).—Hirsute, cyanotic face and injected conjunctiva. (Courtesy of Dr. Bauer.)

Case 14 (P. B. B. H. surgical number 40886).—*Precocious adolescence followed by amenorrhea. Hypertrichosis, acrocyanosis and purplish striae. Vascular hypertension. Recent convulsions. Roentgenologic evidence of vertebral softening with collapse. Increased calcium elimination. Radiation of pituitary body. Marked symptomatic improvement.*

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[4] The bones unfortunately were not made a particular object of study, though it has been learned from Dr. Bauer that the patient had a cervicodorsal kyphosis ("runde Rücken") such as is commonly seen in fat people.

[5] For calling my attention to this case, acknowledgment is due to my medical colleague Dr. Reginald Fitz; to Dr. L. F. Davenport, the medical intern, I am indebted for his record and preliminary studies made before the young woman was transferred to the surgical service.

Alice D., aged 15, was admitted to the Brigham Hospital, March 29, 1932, chiefly because of what was taken to be an infected pilonidal sinus. When about 8 years of age, following an appendectomy, she acquired a voracious appetite and began to grow fat. At 10 years of age, normal menstruation set in with early acquirement of secondary sex characters. In 1927, because of recurrent attacks of sore throat, a tonsillectomy had been performed. Her weight at that time was 103 pounds, height 50 inches. In 1928, she weighed 122 pounds; in 1929, 137 pounds; and in 1930, she was said to weigh 170 pounds, which under a restricted diet was reduced to 137 pounds. In April, 1930, her previously normal menstrual periods abruptly ceased. Her basal metabolic rate at the time was reported as —28 per cent.

For the two years prior to admission she had been under the care of a local physician. She was once put on a pituitary regimen, which apparently aggravated her symptoms. In December, 1931, she had a sudden convulsion on the street and was taken home unconscious. She subsequently attended the ambulatory clinic of the Brigham Hospital, where she was found to have a basal metabolic rate of —33 per cent; she was given thyroid extract and referred to the obesity clinic. On February 29, a month before admission, she again had another convulsive attack and the local doctor found glycosuria.

Examination.—This showed a cooperative and intelligent girl complaining of headache, lumbar backache, and an ischiorectal infection. Her height was 5 feet (152 cm.); she weighed on admission 132 pounds (60 Kg.). There was moderate adiposity, chiefly of face, neck and trunk (fig. 6). She was definitely round-shouldered. Her face was puffy and plethoric with pronounced hirsuties of lips, cheeks and chin, associated with definite thinning of the hair of the dandruffy scalp. There was also a fine growth of hair over thighs, arms, legs and back. The skin was dry, dusky and scaly, and there was marked acrocyanosis. Numerous short purplish striae were present, radiating from the groins onto the abdomen, and there were many transverse reddish striae over the legs.

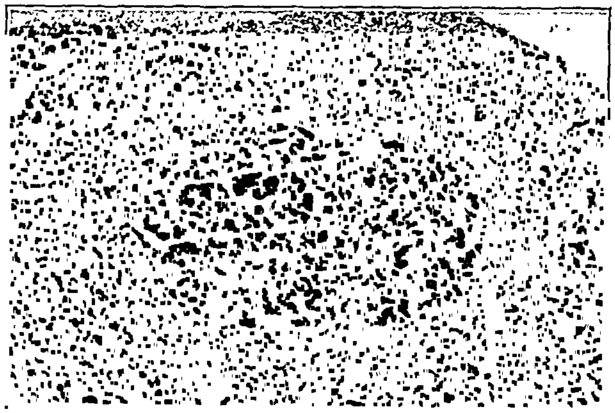

Fig. 5 (case 13).—Small basophilic adenoma. (Courtesy of Dr. Sternberg.)

*Calcium Phosphate and Nitrogen Elimination of Case 12**

Period	Volume of Urine	Titratable Acidity, Cc. N/10	NH_3 Cc. N/10	Calcium Urine, Gm.	Calcium Fecal, Gm	Calcium Total, Gm.	Calcium Intake, Gm.	Phosphate Urine, Gm.	Phosphate Fecal, Bm.	Phosphate Total, Gm.	Phosphate Intake, Gm.	Phosphate Balance, Gm.	Nitrogen Urine, Gm.	Nitrogen Intake, Gm.
I a...............	1,600	—58	272	0.65	0.27	0.92	0.30	0.87	0.47	1.34	1.86	+0.52	19.2	24.2
b...............	1,300	—16	327											
c...............	1,340	13	240											
II...............	4,510	....	...	0.84	0.48	1.32	0.30	0.75	1.08	1.83	1.86	+0.03	15.4	24.2

* Kindness of Dr. Aub.

The blood pressure averaged 140/110, the highest registration being 180/110. The basal metabolic rate was —22 per cent. She was found to have a low sugar tolerance, 100 cc. of dextrose leading to a hyperglycemia of 212.7 mg. per cent after sixty minutes. Her fasting blood studies showed 4,800,000 erythrocytes; 9,400 leukocytes with 87 per cent polymorphonuclears; hemoglobin was 80 per cent; nonprotein nitrogen, 30.7 mg. per cent; calcium, 12.1 mg. per cent; total protein, 5.4 mg. per cent; cholesterol, 173 mg. per cent.[6]

Roentgenologic studies showed a peculiar mottled atrophy of the bones, particularly apparent in the cranial vault. The dorsal kyphosis was associated with compression of several of the vertebral bodies, more marked in the fifth and seventh. There were six lumbar vertebrae, two of them, the fourth more particularly, showing definite compression (fig. 7). In contrast to the general appearance of atrophy, the margins of the vertebral bodies appeared eburnated. The epiphyses of the long bones were normal for her age but appeared denser than normal. The humeri and radii showed mottling and enlargement of the trabeculae and thinning of the cortical portion of the bones. Similar changes were present in the ribs. The heart on measurement was definitely enlarged.

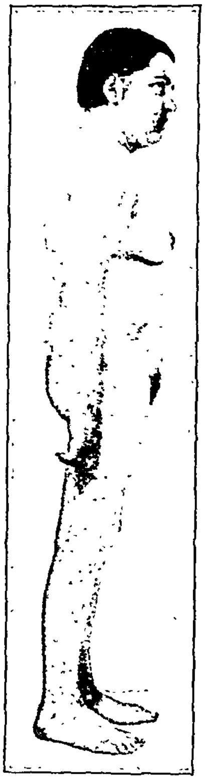

Fig. 6 (case 6).—Configuration of stoop-shouldered, abdominous patient with hirsuties, cyanotic extremities, and purplish striae.

In view of the apparent decalcification of the bones and the estimated increase in blood calcium, my colleague Dr. J. C. Aub kindly offered to investigate this matter in greater detail. Accordingly, April 10 she was transferred for ten days to the Huntington Memorial Hospital, where the previously estimated increase in blood calcium was not substantiated, the serum calcium being 9.8 mg. per cent and serum phosphorus 2.7 mg. per cent. However, a surprising increase in calcium output was found.

Dr. Aub's data are given in the accompanying table and his personal note follows:

> She was given a neutral diet containing only 100 mg. of calcium daily. After a preliminary equilibrium was established, we studied her excreta for two periods of three days each. She showed herself to be in nitrogen and phosphorus balance. Her calcium output, however, was far in excess of our normal figures for this diet, which are 186 mg. of calcium in the urine and 386 mg. in the feces per period. Therefore, it is clear that this patient, who ought to have distinctly lower than normal figures because she is a growing girl, is excreting far too much calcium by urine. This abnormal urinary excretion cannot be explained by an acidosis, for the titratable acidity and ammonia in the urine were normal. With her low basal metabolism, it certainly cannot be explained by an overactive thyroid. Because of her low blood phosphorus a vitamin D deficiency is suggested, but I think it far more likely that she has mildly overactive parathyroid secretion.

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[6] The patient's sister, used as a control, showed blood cholesterol of 110 mg. per cent.

In the course of these tests it was observed that an abnormal amount of fat was being excreted, and though this deserved more thorough study the patient was becoming restive over her prolonged hospitalization and she was readmitted to the Brigham Hospital.

On April 21, 23, 25 and 26 she was given a series of high voltage roentgen treatments, with prompt improvement in her general condition. Her previous complaints of headache, lumbar pains and general indisposition which kept her in bed quickly subsided. She became alert, interested in her surroundings, and soon was engaged in helping the nurses in their ward work. She remained under observation until May 7, no striking change in her constitutional symptoms having been observed other than an apparent tendency to a lowered blood pressure, and a definite diminution of her former plethora both of face and extremities.

These further notes serve to increase the percentage of proved basophil adenomas in association with the polyglandular syndrome under discussion. Instead of only three out of eight cases that had been examined post mortem, there are now six out of eleven (including Dr. Moehlig's patient) in which a pituitary basophil adenoma has been disclosed. The pituitary body in two other cases was said to be normal, but in the absence of serial sections this mere statement is no longer convincing.

When one takes into consideration not only the presumed *infrequency* of adenomas of this type but their small size, whereby they easily escape detection, and couples this with the fact that chief attention has been paid to the condition of the adrenal glands in all the autopsies heretofore conducted, the fact that a basophil adenoma has been found in half of the patients who have succumbed to this peculiarly unmistakable malady must be something more than coincidence.

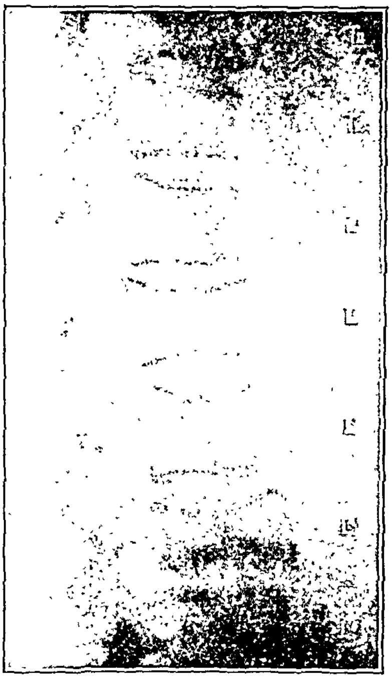

Fig. 7 (case 14).—Lumbar spine, showing osteoporosis of bodies, chiefly affecting the fourth lumbar.

Postscript.—The bearing of basophilism on states of vascular hypertension is in need of further study. Whereas the hypopituitarism of most chromophobe adenomas is usually associated with a subnormal blood pressure, there have been four examples out of some 200 recorded cases in which there was an unaccountable vascular hypertension. A review of the old clinical histories of these patients, in the new light shed on the syndrome of basophilism, reveals that one of them at least had unmistakable pituitary basophilism. What is more, a patient under observation at the present time with long-standing, so-called essential hypertension associated with moderate adiposity and cutis marmorata appears to have been definitely benefited by irradiation of the pituitary body.

ASTHENOPIA, A PSYCHONEUROSIS AND A MEDICAL RESPONSIBILITY

C. W. RUTHERFORD, M.D.
IOWA CITY

The forty-one volumes of section transactions contain but six papers on the relationship of defects of the visual system to the psychoneuroses, and two of them were presented by guests who were not ophthalmologists. Fourteen other papers give incidental attention to asthenopia. The subject has been neglected to the detriment of physician and patient alike.

It is my purpose in this paper to define asthenopia, to distinguish it from simple eyestrain, to identify it as a psychoneurosis and to establish it as a medical responsibility. Its management requires a searching history, a thorough examination and a working knowledge of the psychoneuroses.

STATEMENT

All students at the State University of Iowa who had been referred by the department of student health to the eye clinic during the second and third months of the first semester of the school year 1931-1932 were listed consecutively. The clinical records that dealt with completed refractions of patients from 17 to 26 years of age were chosen; those that showed fundus or field changes, high myopia, strabismus or other organic lesions were excluded. Eighty cases of ametropia and heterophoria remained for study. No significant disorder of accommodation was found.

Tables were made to ascertain if patients could be classified to show relationships between specific complaints and specific visual defects. Too many contradictions and discrepancies were encountered. The study was continued to ascertain if asthenopia might be a manifestation of the reactions of the nervous system to fatigue, with its unpleasant and annoying consequences, and if it can be classed as a psychoneurosis.

Hart[1] stated that "However desirable the merging of psychopathology in general pathology may be held to be, it must be admitted that . . . there is a field in which psychology can aid our understanding and our practice in a way not yet possible for physiopathology." He also said that "In therapeutics it is justifiable to act on hypotheses" . . . because therapeutic result is the goal of the art of medicine.

Science investigates phenomena first by collecting and recording facts; second, by arranging the facts into series and sequences, and third, by discovering a formula to account for or control the series or sequence of facts and to predict their reappearance. The formula may be phenomenal, to account for demonstrable facts such as the movement of planets in their orbits, or conceptual, to explain facts of experiment such as the wave theory of light, or facts of experience such as reflex pain. A concept requires the assumption of hypothetic entities which are not demonstrable; but as Hart said "The validity of a scientific conception is measured by the service it is able to perform in the understanding, the prediction and the control of the facts of experience."

Three of the students had no complaints, fourteen complained only of poor vision, and sixty-three had one

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From the Department of Ophthalmology, State University of Iowa Hospital and College of Medicine.

Read before the Section on Ophthalmology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

[1] Hart, Bernard: Psychopathology, New York, The Macmillan Company, 1927, p. 93.

or more symptoms, such as smarting, burning and itching of the eyelids, tired feeling in the eyes, transient blurring of vision, diffused or localized superficial headaches, lacrimation, general feelings of fatigue, drowsiness, diplopia, dizziness and nausea that followed close work or were intensified or aggravated by it. The symptoms had no demonstrably systematized relation to the visual defects. Patients with comparable complaints had dissimilar defects; comparable defects were accompanied by dissimilar complaints or by no complaint.

Can psychology reconcile the apparent contradictions and discrepancies that were encountered when an attempt was made to account for the state of asthenopia on a demonstrable basis, and can a conceptual formula provide logical grounds for the classification of asthenopia as a psychoneurosis?

PSYCHOLOGY

The instinct of self-preservation is inherent in all persons, and from it are derived impulses that cannot be alienated from life; it is independent of volition, and a person is usually unaware of its existence. Organized society has set up arbitrary standards for the regulation of the conduct of its members. These standards and the usages practiced for their maintenance and operation constitute the social environment of the individual. Ages ago the herd instinct welded individuals into nations, yet no refinement of civilization has weakened that older, more primitive, more inherent and more essential instinct of self-preservation that drives man to engage in competition.

The impulses from the older self-preservation instinct occasionally rise above those from the newer herd instinct, and then the individual is in conflict with the herd and what may be the best interests of the herd. The war psychoneuroses constitute an example. The emotionally stable person adjusts himself to such situations through repression, or by burying in his unconscious mind the unpleasant and annoying experiences of the conflict, and through sublimation, or by directing his energies along useful and acceptable channels. The emotionally unstable person who fails in repression and sublimation must find adjustment on a lower and more primitive level.

Rationalization is a process of adjustment on a low level of emotionality; it consists of knowingly or unknowingly assigning grounds for his conduct that satisfy the individual. Logical reasoning is incompatible with it. No argument can prevail against it. One may rationalize a convenient headache to be excused for not calling on a bereaved friend, going to work or preparing a recitation, or an extenuating explanation for behavior that is not countenanced by others. The mechanism is a protective device for evading personal responsibility. "She gave me of the tree." "The serpent beguiled me."

We satisfy our desires in one of two ways; we get what we want or we imagine we have it. The first is reality, and the second is phantasy; either satisfies in a psychologic sense, for attainment is the goal. The fundamental problem of life is that of adjustment to environment, the conflict between personal inclinations or desires and the conditions that comprise the environment. The nervous system brings sensory data into consciousness; if the resulting experience is unpleasant, it must be repressed into the unconscious mind or adjustment cannot be made.

Functional mental disorders may be regarded as failures to effect adjustments that will be in harmony with the environment. Failures can be attributed to an inherent nervous instability or an endogenous psychopathic predisposition; the individual lacks the ability to deal satisfactorily with the realities in life. Something is lacking in the make-up; perhaps it is in an arrest of development or a maldevelopment. Such a person is always handicapped. Stigmas of degeneration sometimes seem to predict the probability of the failure of nervous stability under stress. Those that interest ophthalmologists include ametropia, heterophoria, strabismus, color, day and night blindness, albinism, nystagmus, etc.

A psychopathic or neuropathic predisposition may be either latent or manifest. Contributing factors that often operate under stress to convert a latent into a manifest condition are the periods of youth and adolescence—the time when dementia praecox usually begins, malnutrition, insufficient sleep, exhaustion as from overstudy, hardships, and emotional strains as worry over finances or school work, anxiety to make passing grades, love affairs, bereavements and so on. Low states of vitality due to organic diseases or physical causes are also predisposing factors of importance.

Each nervous organization has its limits of endurance; when neural equilibrium is unstable maladjustments are prone to occur, and these may lead to actual mental disease. The symptoms that indicate the presence of these defects may be interpreted as manifestations of compromises in the conflict between unconscious, instinctive or involuntarily directed tendencies and conscious, rational or volitionally directed tendencies. A person develops symptoms inversely to his ability to meet situations and effect high level adjustments; hence, symptoms are evidences of defense.

PSYCHONEUROSES

The psychoneuroses form a group of disorders in which mental forces or ideas bring about various mental and physical symptoms. They are adaptive reactions of the nervous system whenever the organism needs to substitute for its normal behavior something that is or resembles a disease. They are an expression of an automatic defense mechanism that protects a person from experiences that tend to weaken him or imperil his existence. The effect is to convert instinctive reactions into abnormal experiences which appear as symptoms or symptom groups. The psychoneuroses serve the individual's needs.

Lunt and Riggs[2] defined the psychoneuroses as disorders of the nervous system that give rise to recognizable physical signs and symptoms without a demonstrable physical cause. They added that constitutional factors of sensitiveness and suggestibility enter into the make-up of the psychoneurotic person. When sensitiveness is misunderstood and mismanaged, it becomes hypersensitiveness.

Emerson[3] regarded a psychoneurosis as not necessarily so much a disease as a handicap due to a mental or physical defect which leads to symptoms that the patient accepts as a part of his life and that may, because of the fatigue and suffering produced, result in nervous and mental breakdown. Lautenbach[4] believed that the neurotic element is often only the reflex condition brought about by a train of pathologic

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2. Lunt, L. K., and Riggs, B. A. F.: The Ophthalmologist and the Psychoneuroses, J. A. M. A. **83**: 1968 (Dec. 20) 1924; Tr. Sect. Ophth., A. M. A., 1924, p. 65.

3. Emerson, C. P.: The Ophthalmologist and the Physician, J. A. M. A. **72**: 1817 (June 21) 1919; Tr. Sect. Ophth., A. M. A., 1919, p. 28.

4. Lautenbach, L. J.: The Use of Full Correcting Cylindric Glasses in All Cases of Astigmatism, J. A. M. A. **30**: 244 (Jan. 29) 1898; Tr. Sect. Ophth., A. M. A., 1897, p. 312.

circumstances. Gould[5] noticed that signs of mental deterioration frequently appear after years of suffering from asthenopia.

It must be remembered that normal persons have some psychoneurotic traits and that psychoneurotic persons have many normal traits.

ASTHENOPIA

Asthenopia is a syndrome in which the visual discomforts that attend prolonged close work are accompanied by feelings of fatigue and reflex manifestations remote from the eye. It can be classed as a psychoneurosis because of its mechanism and symptomatology. The term eyestrain may be reserved for those cases in which visual discomforts are brought on by prolonged close work, are limited to the eyes, and promptly disappear when close work is discontinued. Panoramic headaches are not under consideration.

An emmetropic person with good accommodative power has the advantage of sharp retinal images to assist in stabilizing binocular fixation at close work. An ametropic person lacks this advantage, and is only partially compensated when made emmetropic by correctly fitted lenses; he usually has another disadvantage in his accommodative sensitivity or power.

In hyperopia this power is generally too great, and continuous use of the eyes is apt to cause accommodative spasm with excessive convergence and blurring of images. It is an artificial myopia; both far point and near point advance toward the eye. The spastic condition brings on fatigue prematurely. In myopia the power is generally too weak, the accommodation soon fails, the near point gradually recedes from the eye, and there is no ocular compensating mechanism; because of early fatigue the convergence relaxes and there is a blurring of images, or even diplopia. To continue at close work under either circumstance requires the expenditure of greater and greater amounts of energy. There is a rapid accumulation of fatigue with its train of unpleasant and annoying experiences.

Either emmetropic or ametropic persons may have some sensitiveness, weakness or instability of the nervous system, by reason of which they are subject to feelings of fatigue consequent to continuous or prolonged use of the eyes for close work.

Heterophoria is a weakness in coordinating ability and stability of the eye-directing muscles; the result is a tendency of the fixation axes to fail to intersect each other at the exact distance and position of the object of regard. This weakness may cause diplopia unless it is avoided by an unusual expenditure of nervous and muscular energy.

Precise intersection of fixation axes is effected and maintained by the operation of a neural reflex arc which accomplishes fusion of cortical images. Retinal images act as peripheral stimuli to excite sensory impulses to the cerebral centers where they are transformed into motor impulses to the extra-ocular muscles. If the retinal images are identically situated a minimum of energy is expended, but if these images are not so situated, and the patient has fusion sense, energy is expended in a greater amount, and the amount corresponds directly to the range of movement required to place the images on identical or corresponding points of the retinas so that the fixation axes can correctly intersect each other. The further expenditure of energy depends on the amount necessary to maintain or stabilize fixation. The amount of available energy varies among individuals.

Heterophoria is not caused by ametropia alone; it is often found in emmetropic persons. Yet ametropia may increase the amount of an existing heterophoria while fatigue is accumulating.

An ametropic person, because of more or less blurred retinal images, must maintain a greater intensity of fixation in close work than the emmetropic with sharp retinal images; the necessity for exactness of fixation over continuous or prolonged periods of time induces fatigue earlier in the ametropic than in the emmetropic person, provided the nervous systems of the two are equally stable or unstable. The myopic person may have sharp retinal images at close work, but to maintain convergence requires intent fixation; the effect is the same.

The correction of ametropia serves to remove the necessity for intense exact fixation; it raises the ability to resist the unduly rapid accumulation of fatigue and thus aids in stabilizing the nervous system by reducing the rate and amount of its expenditures. In time, the tendency to horizontal deviations may be reduced to amounts that do not cause discomfort, and tendencies to vertical deviations are often favorably influenced.

Fatigue consequent on neural or muscular exercise operates as an instinct for protecting a person against mental or physical exhaustion, and that instinct is satisfied only with rest. The time of onset and the rate of accumulation of fatigue are influenced to some extent by interest in or distaste for the work on which the person is engaged. Insufficient food or sleep has an adverse influence on endurance. Mental work requires close attention and also exercise of the muscles of the eyes, neck, hands and arms, as well as those of the body in maintaining posture.

Few students can do the work required of them without becoming subject to fatigue, and many of them prematurely so. Continuous prolonged application to the preparation of lesson assignments induces a group of sensations which are called "feelings of fatigue;" they are of an unpleasant, annoying character and are progressive during semester examinations. The sensations include numbness, soreness and aches or pain in the eyes, orbits or head, and less frequently in parts of the body remote from the eyes. Vascular discomforts, such as sensations of heat, burning, itching and scratching of the eyelids, are common. Glandular activity is exhibited in increased lacrimation. Visceral discomfort is sometimes indicated by nausea.

When fatigue develops there is an insistent desire to rest. If work is continued in spite of fatigue, the attention lags and must be forced. The experience becomes so unpleasant that the unconscious mind rebels and develops a system of emotional reactions for the protection of the individual. It is the instinct of self-preservation, the protective reaction of the nervous system.

Ametropia, disorders of accommodation in close work, heterophoria, evidence of a sensitive, weak or unstable nervous system and of fatigue constitute the facts that have been collected and recorded in relation to asthenopia. The first step in the scientific procedure is complete. The facts have been arranged as required for the second step. Ametropia, disorders of accommodation and heterophoria are demonstrable phenomena that can be measured at the time of examination, while a sensitive, weak or unstable nervous system is hardly a demonstrable entity that can be measured.

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[5] Gould, G. M.: The Statistics and Lessons of Fifteen Hundred Cases of Refraction, J. A. M. A. **17**: 432 (Sept. 19) 1891; Tr. Sect. Ophth., A. M. A., 1891, p. 289.

Since there are many patients who have demonstrable ametropia, disorders of accommodation and heterophoria but no asthenopic symptoms, there is justification for the assumption of a concept to account for the presence of such symptoms in patients who are otherwise apparently similar. For the third step in the scientific procedure it can be stated that without sensitiveness, weakness or instability of the nervous system there will be no feelings of fatigue from such employment of the eyes in close work as is demanded of the average student, and without feelings of fatigue there will be no asthenopia. The prediction of reappearances will be discussed presently.

The literature of the section supports this concept.

White, discussing Jones's[6] paper, said he had noticed the progressive incidence of eye defects among Negroes in the twenty-five or thirty years preceding 1908. He attributed the change to education and other environmental factors that demand close eye work. Pyle, discussing the same paper, referred to the report concerning the increase of refractive errors among students at the Carlisle Indian School as they advanced in their studies. He thought that the progressively increased demands for close eye work brought on symptoms of asthenopia and that careful examinations disclosed previously unknown errors.

Emerson remarked the frequency with which asthenopic headaches begin in the period of adolescence and young adult life with close eye work. Stevenson and Walker[7] observed that many young persons suffer distress after continued close work, but experience no difficulty in ordinary use of the eyes. It is the added strain in near work that distresses and injures, especially if there is impairment of the general nervous system. Gould[5] stated that setting the eyes to unusual tasks diminishes resisting power.

Derby[8] declared that the use of the eyes should be a subconscious function. When it enters the consciousness the patient goes to an ophthalmologist to know the reason why. Woods[9] thought that fatigue symptoms might be due to special susceptibility of the eyes to physical or psychic irritation; when a patient insists that he cannot do near work on account of his eyes, and no explanation can be found in the eyes, a remote cause must be sought. Gould[10] believed that asthenopia due to heterophoria is innervational in origin. Murrell[11] often found heterophorias among psychoneurotic persons with nervous symptoms! Carpenter[12] noted the association of hyperphoria and general reflex derangements of the nervous system.

Starkey[13] observed the relation of latent errors of refraction to asthenopia. Gould[14] urged that a slight uncorrected ametropia might be the cause of strange and serious reflexes and results, and that even emmetropia in any hard pushed eye worker might operate as a functional disease and require treatment.

Emerson considered vision a neuromuscular function that requires an expenditure of nervous force. Hobby[15] concluded that asthenopia indicates a state of inadaptability to environment, so it is the individual and not the eyes alone that is asthenopic. Derby recognized that many patients use the eyes as convenient avenues of escape from unpleasant situations (rationalization).

Theobald[16] reported cases of reflex aural neuroses caused by ametropia and heterophoria.

Manifestations of psychoneurotic traits and tendencies can be predicted with convincing frequency among young persons who have defects of the visual system. United States Army Regulations[17] for the examination of candidates for flying training specify standards for the visual functions. The object of the examination is to select for training for pilot duty persons who are both physically and mentally qualified to fly a ship safely under conditions of stress and fatigue. Because of their significance as indicators of muscular, neural and mental sensitiveness, weakness or instability, candidates are disqualified on the following visual defects:[18]

1. Central visual acuity of less than 6/6 or J.1, or of 6/6 or J.1 with a minimum true or cycloplegic correction of more than 1 D. in any meridian.
2. Distant esophoria of more than 10 centrads, or of more than 4 centrads when associated with more than 1 D. of hyperopia.
3. Distant exophoria of more than 5 centrads, or of more than 2 centrads when associated with an angle of convergence of less than 50 degrees.
4. Hyperphoria of more than ½ centrad.
5. Near exophoria of more than 12 centrads; from 3 to 6 centrads is considered normal.
6. Prism divergence of less than 4 centrads or of more than 15 centrads, or of more than 9 centrads when associated with an angle of convergence of less than 50 degrees.
7. An angle of convergence of less than 40 degrees, or of less than 50 degrees when associated with a true hyperopic correction of more than 1 D., or with a prism divergence of more than 9 centrads.

Flight surgeons recognize not only the manifest and inherent or latent hazards attributable to defects or incompetences of the visual functions themselves, but also the significance of such defects and incompetences in the general physical and mental organization of a person. The strains and stresses incident to flying exhaust energy out of proportion to the physical effort involved in flying; stability is taxed accordingly. Persons with defects expend energy more rapidly and recuperate less promptly than do those without defects, and are therefore more apt to become stale and unfitted for flying. Staleness is not exhibited so much in a general physical deterioration as it is in a disturbance of judgment in meeting occupational situations; that is, the interpretation is neural or mental maladjustment.

In staleness the flyer must drive himself in the performance of his duties; he accomplishes this by the aid of more powerful and more frequent neural impulses. The process continues and expands until the nervous system fails or rebels, and the mind, knowingly or unknowingly, seeks relief through protective reactions such as eyestrain, headache, neurasthenic heart, indigestion, attacks of diplopia, dizziness, nausea or fainting, or any symptom that may operate to relieve the flyer of duty. There is a conflict between inclination or desire and discipline or duty. If the pilot is unable to adjust himself psychologically, he is disqualified for flying. He has exposed an instability that was not detected in the examination and that only became apparent under the stresses of training.

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[6] Jones, C. P.: A Study of One Hundred Refraction Cases in Indians Fresh from the Plains, J. A. M. A. **51:** 308 (July 25) 1908; White, J. A., and Pyle, W. L., in the discussion, p. 311; Tr. Sect. Ophth., A. M. A., 1908, p. 205.

[7] Stevenson, M. D., and Walker, E. M.: Prescribing of Lenses for Close Work, J. A. M. A. **55:** 110 (July 9) 1910; Tr. Sect. Ophth., A. M. A., 1910, p. 196.

[8] Derby, G. S.: *Ocular Neuroses, J. A. M. A.* **95:** *913* (Sept. 27) 1930; Tr. Sect. Ophth., A. M. A., 1930, p. 305.

[9] Woods, Hiram: Ocular Neurasthenia, J. A. M. A. **49:** 211 (July 20) 1907; Tr. Sect. Ophth., A. M. A., 1907, p. 306.

[10] Gould, G. M.: Incurable Eyestrain, J. A. M. A. **47:** 734 (Sept. 8) 1906; Tr. Sect. Ophth., A. M. A., 1906, p. 279.

[11] Murrell, T. E.: Some Practical Experiences with Muscular Anomalies, J. A. M. A. **21:** 642 (Oct. 28) 1893; Tr. Sect. Ophth., A. M. A., 1893, p. 177.

[12] Carpenter, J. T.: A Clinical Study of Hyperphoria, J. A. M. A. **30:** 198 (Jan. 22) 1898; Tr. Sect. Ophth., A. M. A., 1897, p. 261.

[13] Starkey, H. M.: Latent *Astigmatism,* J. A. M. A. **25:** *853* (Nov. 16) 1895; Tr. Sect. Ophth., A. M. A., 1895, p. 281.

[14] Gould, G. M.: A Case of "Mathematically-Perfect Eyes," J. A. M. A. **31:** 632 (Sept. 17) 1898; Tr. Sect. Ophth., A. M. A., 1898, p. 28.

[15] Hobby, C. M.: Asthenopia, J. A. M. A. **23:** *377* (Sept. *8*) *1894;* Tr. Sect. Ophth., A. M. A., 1894, p. 123.

[16] Theobald, Samuel: Reflex Aural Neuroses Caused by Eyestrain, J. A. M. A. **53:** 112 (July 10) 1909; Tr. Sect. Ophth., A. M. A., 1909, p. 104.

[17] Army Regulations, 40-110, Medical Department, Standards of Physical Examinations for Flying, Feb. 25, 1931, pp. 6-14.

[18] These do not apply strictly in the reexamination of rated pilots.

Considered as candidates for pilot training in the United States Army Air Service, sixty of the eighty patients at the university are disqualified on from one to five defects of the visual functions. These figures, I understand, are roughly comparable to those found at the training school for flight surgeons. Of the twenty who qualify visually, two are on the borderline and eighteen are within limits of normal muscle balance.

MANAGEMENT

The following references and comments apply to young persons, the class that has been considered in this discussion. Technical details of treatment are omitted.[19]

Derby felt that ophthalmologists face a great responsibility when these patients come to them. He believed that a searching history and a thorough examination are essential to success; the comfort, efficiency and happiness of the patient may depend on the way in which we interpret and seek to explain the psychologic factor.

Emerson advised that patients should be examined as individuals and not as optical mechanisms to be fitted to a test chart; that it is more important to help patients to see comfortably than to help them to see clearly; that lenses should be fitted to a patient's nervous system as well as to his eyes; that all static ametropia be ascertained before planning to correct any of it, and that a patient should not be hurried while being examined.

Starkey[20] believed that low ametropic errors should be corrected. Stevenson and Walker thought the distant correction should be worn constantly for several weeks, when, if all the symptoms were relieved, the lenses might be dispensed with except for close work. Thomas[21] insisted on the strict adoption of a 13 inch reading distance. Conner[22] thought the waste of nerve energy in close work can sometimes be prevented by correcting the near exophoria with prisms; Savage[23] suggested that the lenses be decentered.

Prisms in hook-fronts for wear while at close work only are often of value until symptoms from near exophoria are relieved.

Jackson[24] observed the action of mild cycloplegics in quieting reflex or remote symptoms.

Many of these sensitive patients fail to receive the relief they desire because of improper illumination while at close work. Lighting equipment should be arranged to avoid glare and to divert reflections from paper, nickeled typewriters, polished furniture, etc., away from the face or eyes and yet furnish abundant illumination. Daylight glass or inside-frosted bulbs are desirable.

Hobby said that while the correction of visual disorders was of great benefit, complete relief depended on adjustment to environment. Carpenter believed that a knowledge of general nervous disease is absolutely essential in the management of these conditions, and Derby lamented that these cases are ordinarily handled with less skill and judgment than they should be.

Derby probably meant indifference rather than incompetence. Long ago Charcot warned the medical profession that more mistakes are made by not examining than by not knowing. Shall it be said that physicians react as psychoneurotic persons toward refraction, that they cannot effect a high level adjustment in the conflict between obligation to and disinclination to examine thoroughly and study these miserable asthenopic sufferers? How can a physician rationalize a simple trial case test under cycloplegia—or without it—into an honest service? Is it egotism, conceit or indifference that lets any one think he can give a minimum of professional talent and obtain a maximum of therapeutic result? Hysteria is not a legitimate diagnosis when it is based solely on failure to help the patient!

No asthenopic patient should be told "There is nothing the matter with you; forget it!" There *is* something the matter with him; he *can* not forget it; he *will* not forget who told him! Thorough questioning will reveal the direct and contributing causes of symptoms. A carefully planned and executed examination will disclose the nature and extent of ocular and visual defects; it will likewise impress the patient that he is being taken seriously and that his case will be understood.

Lunt and Riggs said it is only by our better understanding and by adopting a dynamic attitude that recognizes the curability of the functional nervous disorders that physicians can fulfil their opportunities and obligations.

Hobby protested against the treatment of asthenopia by those who see in it only a disorder of the looking machine; these conditions fall within the province of the physician and are entitled to his thorough scrutiny. Emerson observed that optometrists treat the eyes as optical instruments and claim to do nothing more, and that many physicians do nothing more! He then said that refraction is the highest expression of the ophthalmologist's art, not to be handed over to a junior as a necessary evil to be endured.

When ophthalmologists consistently excel in the relief given to asthenopic patients there will be no question of who should refract.

CONCLUSION

What progress has the section made in the study of asthenopia and its management in the last forty-one years? In 1891, Gould closed his address with this paragraph:

> Refraction is a science and an art in intimate union and requires as much patience, delicacy of perception, fineness of judgment and discrimination as any scientific work in the world. In relation to it there are vast fields of inquiry the wisest have hardly begun to explore. The amount of human misery caused by these ocular defects is appalling, and if the prevention and relief of that misery be the motive of scientific medicine, no branch is more important or demands higher powers of mind than that of ophthalmology—and nine-tenths of modern ophthalmic practice consists of refraction!

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[19] See Dr. Green's paper at this meeting.

[20] Starkey, H. M.: Are Low Degree Lenses Merely of Mythical Value? J. A. M. A. **23:** 367 (Sept. 8) 1894; Tr. Sect. Ophth., A. M. A., 1894, p. 87.

[21] Thomas, C. H.: Vicious Reading Distance as a Cause of Asthenopia, J. A. M. A. **30:** 243 (Jan. 29) 1898; Tr. Sect. Ophth., A. M. A., 1897, p. 310.

[22] Conner, Leartus: Heterophoria as a Cause of Acute Rhinitis, Loss of Smell and Tinnitus Aurium, J. A. M. A. **19:** 306 (Sept. 10) 1892; Tr. Sect. Ophth., A. M. A., 1892, p. 227.

[23] Savage, G. C.: The Decentering of Lenses for Near Work, J. A. M. A. **39:** 1294 (Nov. 22) 1902; Tr. Sect. Ophth., A. M. A., 1902, p. 411.

[24] Jackson, Edward: The Value of Homatropin in the Diagnosis of Ametropia, J. A. M. A. **27:** 1096 (Nov. 21) 1896; Tr. Sect. Ophth., A. M. A., 1896, p. 239.

ABSTRACT OF DISCUSSION

Dr. Walter B. Lancaster, Boston: In this brief discussion I wish to stress the fact that negative evidence (absence of uncorrected errors of refraction) is not enough for a diagnosis of psychoneurosis. There must be positive evidence, such as the existence of an intolerable situation from which the patient subconsciously is trying to escape by the symptoms that are present. In short, the danger is that one may fall back on the easy diagnosis of psychoneurosis when there is inadequate evidence of this condition. Another group is in my experience even larger and more important than that of the true psychoneurotic or hysterical patients. The patients in this group notice certain sensations or symptoms that occur when they use their eyes. The symptoms are real and may be accompanied by objective signs, such as hyperemia. The patients think the symptoms are signals that must be heeded or dire results will follow; so they stop what they are doing. Their motive is a good and rational one. They value their eyes greatly, and they wish to do the best they can to preserve their eyesight. The mistake is one of interpretation. They think the symptoms are important, whereas they are quite unimportant and should be disregarded. The same thing may happen with disorders of digestion or of other parts of the body. Injudicious handling of such cases causes the patients to be confirmed in their views, and so become worse and harder to cure. These cases include all degrees from a severe anxiety neurosis to a mild apprehension. The latter can be given prompt and welcome relief by an assurance, which must be positive and definite, not doubtful and equivocal, that the symptoms are unimportant and should be disregarded, that neglect of them positively will not lead to permanent damage of any sort. The former require all one's resources and those of consultants, first, to convince them that nothing has been overlooked and, secondly, to eradicate their wrong way of looking at the symptoms.

Dr. Hans Schroeder, New Orleans: I should like to ask Dr. Rutherford what his attitude is toward the use of colored or tinted lenses in asthenopia. Ever since the American licensees for the manufacture of Crooke's lenses came out with such extravagant claims for them and tried to commercialize the product, I have been opposed to their permanent use. Any case in which clear lenses do not satisfy should have the benefit of a general medical or a neurologic examination, to look for foci of infection, as it were.

Dr. C. W. Rutherford, Iowa City: Dr. Lancaster says this is not for the beginner and I think that is correct; but it does apply to the man who is out in practice. While in training a man may as well get this phase of refraction rather than get it without supervision afterward. The term asthenopia is too often used as a synonym for eyestrain. Dr. Lancaster did not fully quote my sentence; I said that the term eyestrain may be reserved for those cases in which visual discomfort is brought on by prolonged close work, and which *promptly disappears when the close work is discontinued*. That is the dividing line between eyestrain and asthenopia. The Doctor speaks of positive evidence being required. What constitutes positive evidence is largely a matter of opinion. Dr. Lancaster used the terms psychoses and psychotic. Please do not think of my paper in connection with the psychoses. A psychoneurosis is something that all have to some extent. Probably every psychoneurotic patient is in some ways normal and the normal individual is in some ways psychoneurotic. The Doctor says that psychoneurosis is not imagination. True. It may exist in what the psychologists call the unconscious mind. That is not the subconscious mind. The patients should be told about their trouble. They are very cooperative if approached in the right way. These matters I take up habitually, and if I can make any suggestions I do it. I base my questions on the patient's complaint and not on the refraction. Dr. Schroeder asked my attitude toward the use of tinted lenses. My attitude is that of resignation in the majority of cases. I seldom think of putting on tinted lenses unless the patient comes in with an old pair of tinted glasses and says he must have that kind. I do not wish to add to his burden and I let him decide with the optician the kind of tint he wants. I specify on the prescription that he may have the tint he desires.

TORSION OF THE APPENDIX TESTIS

REPORT OF TWO CASES

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The first case of torsion of the appendix testis was reported by Colt[1] in 1922. In the same year Walton[2] and Shattock[3] reported one case each. Mouchet[4] was the first, however, to establish this condition as a definite pathologic entity. The fact that twenty-nine cases have come to operation in France alone during the past eight years may be attributed to his interest in the subject. Dix[5] has recently written an admirable paper on the subject and added one case for a total of forty-two cases.

The standard textbooks of surgery do not discuss torsion of the appendix testis nor does a fairly extensive search of North American literature reveal any report of the condition.

REPORT OF CASES

Case 1.—*History.*—Q. F., a boy, aged 16 months, entered the surgical ward of the hospital, Oct. 22, 1931, because of swelling and tenderness of the left side of the scrotum. Six months prior to entry the patient fell down stairs without apparent injury. Five days later, however, the left side of the scrotum was slightly swollen. The swelling disappeared in one week. Five days before entry the patient became irritable. The following day the left side of the scrotum was noted to be swollen. By the third day it was much enlarged and painful. These symptoms persisted up to the time of entry. There were no urinary or general symptoms.

Physical Examination.—The patient was well developed and nourished and in no acute distress. The temperature was 100 F. by rectum. The left side of the scrotum was about twice the normal size and the overlying skin was red. The left testicle was enlarged, firm and exquisitely tender. Slight thickening and tenderness were present along the spermatic cord to the level of the internal ring. There was no palpable hernia. The right side of the scrotum and the right testicle were entirely normal. The urine was normal and the white blood cell count was 14,800 per cubic millimeter. A diagnosis of torsion of the spermatic cord was made, and an operation was done the same day.

Operation and Result.—Ether anesthesia was used. The approach was made through a left inguinal incision. The spermatic cord was edematous and bluish in appearance, but torsion could not be demonstrated. The testicle was delivered into the wound and found to be about twice the normal size. It appeared edematous and purplish. The bluish color of the cord and testicle persisted regardless of the direction in which they were moved or twisted. The spermatic vessels were thought to be thrombosed; therefore, orchidectomy was done.

Convalescence was uneventful. Redness of the scrotum disappeared on the second day. Swelling and tenderness had entirely subsided by the seventh postoperative day. The wound healed by first intention and the patient was discharged nine days after entry.

Pathologic Examination.—Gross: The specimen consisted of a testicle and 2 cm. of spermatic cord, which were enlarged for a patient of this age. The cord was edematous but did not contain thrombosed vessels. The testis was of normal color on cross-section. The epididymis was edematous but was normal in position and structure. There was no appendix epididymidis or paradidymidis but there was a well defined appendix testis. It was attached to the upper pole of the testis by a pedicle 5 mm. in length and 0.5 mm. in diameter. The appendix testis

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[1] Colt, G. H.: Brit. J. Surg. **9**: 464 (Jan.) 1922.

[2] Walton, A. J.: Brit. J. Surg. **10**: 151 (July) 1922.

[3] Shattock, C. E.: Lancet **1**: 693 (April 8) 1922.

[4] Mouchet, Albert: Presse méd. **31**: 485 (May 30) 1923; [illegible] (Oct. 24) 1928.

[5] Dix, V. W.: Brit. J. Urol. **3**: 245 (Sept.) 1931.

was spherical. It was 1 cm. in length and 7 mm. in diameter. It was blue-black and was rather soft in consistency.

Microscopic: The appendix testis was composed of a light myxomatous connective tissue stroma. It was covered by a single layer of columnar cells. The body was coursed by several engorged vessels, some of which had ruptured, filling the stroma with blood. No organisms were seen. The testis and epididymis were normal except for moderate edema. The cord showed considerable edema of its supportive structures. The vessels did not show thrombi.

The diagnosis was hemorrhagic infarction of the appendix testis.

Case 2.—*History.*—S. B., a boy, aged 8 years, was admitted to the surgical ward of the hospital Oct. 26, 1931, complaining of pain and swelling of the left testicle. He had been entirely well until three days before entry. On arising from a chair, sudden sharp pain in the left testicle caused him to cry out. The pain was very intense for one or two minutes, and less severe for one hour. The pain then gradually subsided. The left scrotum was slightly swollen the following day and caused mild discomfort on motion. One day before entry the patient had a second attack of sharp pain in the left testicle, which was severe for twenty minutes. The pain had continued less severe up to the time of entry. Following the second attack, the parents stated that the left side of the scrotum enlarged rapidly and the overlying skin became reddened. There had, been no fever, nausea or vomiting, or urinary symptoms.

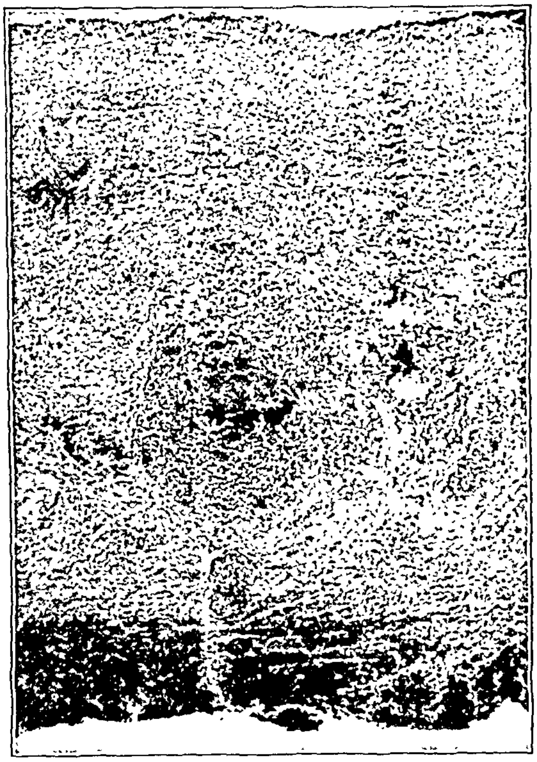

Fig. 1 (case 2).—Section of appendix testis, showing areas of necrosis accompanied by marked hemorrhage; hematoxylin and eosin; reduced from a photomicrograph with a magnification of 115 diameters.

Examination.—The patient was normally developed and nourished and did not appear ill. The temperature was 98.8 F. by rectum. The left thigh was flexed on the abdomen. The skin of the left side of the scrotum was red. The left testicle was about twice normal size, firm and tender. The spermatic cord was not tender along the inguinal canal. There was no palpable hernia. There was no urethral discharge and no enlargement of the salivary glands. Examination of the rectum and urine showed no abnormalities. A diagnosis of torsion of the appendix testis was made.

Operation and Result.—I operated on the patient, the day of entry. A left inguinal incision was used. The spermatic cord showed slight edema but no torsion. The testicle was pulled up into the wound and found to be about twice normal size but of normal color. A black, pea-sized body was seen near the upper pole of the testis beneath the tunica vaginalis. The tunica vaginalis was incised with escape of about 5 cc. of thin, clear yellow fluid. The blue-black lobule (fig. 2), measuring 1 cm. in length, was identified as the appendix testis. It was suspended from the superior pole of the testis by a pedicle measuring 7 mm. in length. The body was twisted three times in clockwise direction on its pedicle. The pedicle was ligated near its base with number 00 plain catgut and the body excised. The tunica vaginalis was everted and sutured. The testicle was returned to the scrotum in its normal position and the wound repaired without drainage as in the operation for radical cure of hernia.

Convalescence was entirely uneventful. The pain ceased immediately following operation. Redness of the scrotum had disappeared by the second postoperative day. Swelling and tenderness gradually subsided. The wound healed by first intention. The patient was discharged nine days after operation; the left testicle was of normal size and was not tender.

Pathologic Examination.—*Gross:* The specimen presented a blackish spherical body measuring 1 cm. in length and 4 mm. in diameter. The specimen was soft and moist.

Microscopic: The appendix testis (fig. 1) was composed of a connective tissue framework, which was covered with columnar epithelium. The connective tissue varied from a rather dense structure to a light myxomatous appearance. In the center of the specimen was a small circular tube cut in cross-section which was consistent with a canal fragment. The vessels were engorged with blood, and in some areas massive hemorrhage filled the entire stroma. Polymorphonuclear and eosinophilic leukocytes were fairly numerous throughout the structure. No organisms were seen.

The diagnosis was hemorrhagic infarction of the appendix testis.

EMBRYOLOGY AND HISTOLOGY

The appendix testis is the vestigial remnant of the upper end of the müllerian duct and corresponds to the fimbriated end of the uterine tube of the female. It is frequently called the "hydatid of Morgagni," or "sessile hydatid." It is quite constant, being present in about 90 per cent of the testes examined. Grossly it appears as a small flesh-colored or reddish lobule projecting from the anterior surface of the testis near its upper pole or from the grove between the testis and head of the epididymis (fig. 3). The size varies from about that of the head of the common pin to that of a grain of wheat, depending somewhat on the age of the patient. It usually has a sessile attachment but is often pedunculated, and the pedicle may range from 1 mm. to 1.5 cm. in length.

Microscopically this appendage consists of vascular connective tissue enclosing a small canal, or fragments of canals, lined with columnar epithelium, which is sometimes ciliated. The canals have no connection with the genital ducts.

ETIOLOGY

The underlying cause of torsion of the appendix testis is obscure. Direct trauma probably plays no significant part, although onset of symptoms most often follows some sudden activity. Infection is not a predisposing factor and probably plays no part in the process. The fluid from the tunica vaginalis has shown no growth on culture, and microscopic examination of sections have shown no organisms.

Dix [5] suggests that this disorder occurs in the presence of preexisting large remnants, which condition would in itself predispose to torsion.

It would appear, however, that the first prerequisite for torsion of the appendix testis to occur is the existence of a pedicle. Then any activity or stimulus causing a sudden or violent cremasteric reflex response could cause the body to twist on its pedicle. This idea of causation, it seems, closely fits the clinical history of onset.

This lesion occurs chiefly in children and young adults. Eighty per cent of the patients have been between 5 and 15 years of age. It may occur, however, in older adults and even in infants.

SYMPTOMS AND PHYSICAL SIGNS

This disorder may be acute or chronic in type.

The acute form is sudden in onset. Sharp pain localized to the affected side is the first symptom. The pain is usually constant for a few minutes and then gradually subsides. Swelling and tenderness follow within a few hours and are sharply confined to the affected side of the scrotum. Redness of the overlying skin appears in from thirty-six to forty-eight hours. Nausea or vomiting is practically never present.

Particularly striking is the absence of systemic manifestations. The patients do not appear ill and there is no evidence of other diseases. The temperature is usually between 100 and 101 F., by rectum, but may be normal. Redness, swelling and tenderness are limited to the affected side of the scrotum. The appendix testis is rarely seen by transillumination. Rectal examination shows nothing unusual. There is no urethral discharge and the urine is normal.

The chronic type is insidious in onset. Pain in the affected testicle is the chief complaint. Occasionally the patient feels a tumor. The scrotum does not enlarge and the skin does not become red. Patients of this group are always ambulatory. The testicle is tender, and often a bilobed mass can be felt near the upper pole of the testis.

DIAGNOSIS

The acute type must be differentiated from torsion of the spermatic cord, strangulated inguinal hernia, and acute orchitis or epididymitis. A differential diagnosis between torsion of the appendix testis and torsion of the spermatic cord or strangulated hernia may be difficult to make. Torsion of the cord or strangulated hernia are unlikely, however, in the absence of systemic manifestations, such as nausea, vomiting, shock and other general phenomena. An acute orchitis or epididymitis of infectious origin should give no great concern in the absence of parotitis, urethral discharge or history of instrumentation. Normal rectal and urine examinations are also unlikely in acute epididymitis. It may be very difficult, however, to make a differential diagnosis between torsion of the appendix testis and "epididymo-orchitis of unknown cause." Mouchet[4] and Dix[5] have suggested that the latter is a misnomer and that the true underlying pathologic condition is probably torsion of the appendix testis.

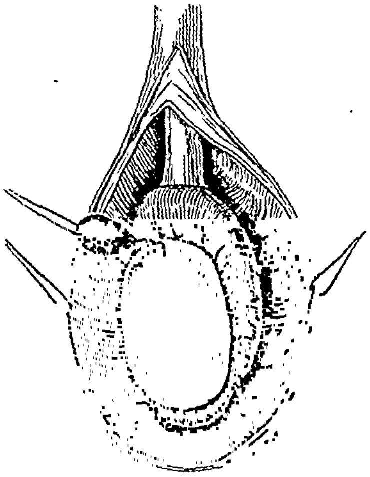

Fig. 2 (case 2).—Torsion of appendix testis, showing enlargement of appendix testis and edema of testis and epididymis.

The chronic type must be differentiated from triorchidism and a free body in a hydrocele sac.

A bilobed mass is usually felt in one side of the scrotum in triorchidism, as in chronic torsion of the appendix testis, but the accessory testicle is practically never tender and gives no symptoms. A free body in a hydrocele sac likewise usually never gives symptoms. The free body, or stone, is situated in the dependent portion of the sac, freely movable and not tender, which is the reverse of the signs of chronic tension of the appendix testis.

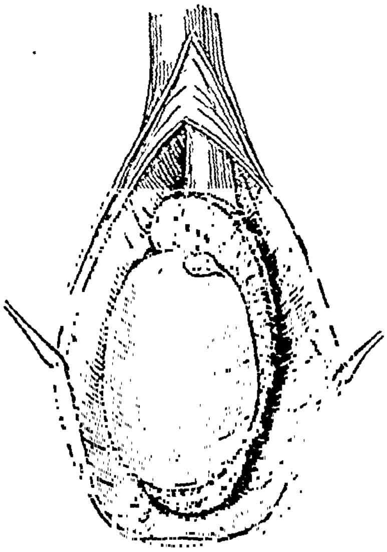

Fig. 3.—Normal testicle, showing the appendix testis projecting from the groove between the testis and the epididymis. The remaining testicular appendages are not shown.

PATHOLOGY

The spermatic cord is usually edematous and may be bluish in appearance. The testicle is edematous and often enlarged to twice or three times its normal size but is normal in color. Occasionally the appendix testis can be seen beneath the tunica vaginalis. The tunica vaginalis almost always contains an excess of fluid, which may amount to 5 or 10 cc. The fluid may be turbid, yellow or blood tinged. The appendix testis may be black, blue-black or red. It is usually about the size of a pea.

The microscopic picture is essentially that of sudden massive infarction, which in some areas has gone on to necrosis. The normal architecture is greatly distorted by the marked hemorrhage, and normal histologic structures cannot be identified with ease. A more complete description of the detailed pathologic changes is included with the case reports.

TREATMENT

Operation is the treatment of choice and should be performed as soon as the diagnosis is made. The incision should be made over the inguinal canal, as this route offers less chance of infection than the scrotal route. The appendage should be excised after ligation of the pedicle at its base. When the pedicle is extremely short, the tumor should be removed without ligature. The possibility of hemorrhage is remote. The tunica vaginalis should be everted and sutured. The wound should be closed without drainage, as in the operation for radical cure of hernia.

PROGNOSIS

There should be no mortality with this operation. The pain ceases immediately following operation, and edema of the scrotum gradually subsides. The testicle is usually of normal size and not tender by the ninth or tenth postoperative day.

CONCLUSIONS

Torsion of the appendix testis is caused by the force exerted by a sudden cremasteric reflex on a pedunculated appendix testis.

"Epididymo-orchitis of unknown cause" is apparently a misnomer. Many of these cases are probably torsion of the appendix testis.

Operation is the best treatment for this condition. The inguinal route is the method of choice.

ANTHELMINTICS

SOME THERAPEUTIC AND PRACTICAL CONSIDERATIONS ON THEIR USE

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In a recent review of the literature we have found references to nearly three hundred substances which have been used against hookworm and Ascaris.[1] Besides this we have tested some three or four hundred other substances on Ascaris in our laboratory. The time which we have here will not allow any true comparison of even the more important of these, and hardly the statement of reasons for our conclusions as to their relative merits.

One drug after another has been tried against the most common intestinal helminths, hookworm and Ascaris, and each has gone through about the same history: first, great enthusiasm about its efficacy and nontoxicity, and then a gradual realization that the results obtained in the treatment of thousands of patients have not come up to first expectations. Cases of intoxication appear, and one more drug is placed in the list of anthelmintics which must be used with caution. Having lately introduced a new anthelmintic ourselves, we are in the early period of enthusiasm in which we hope to find that it will prove to be of value, but already unexpected complications have arisen and it remains to be seen whether this substance will survive as well as its predecessors.

When we attempt to give roughly the present status of anthelmintic treatment, we find that we have for hookworm, thymol, betanaphthol, oil of chenopodium, ascaridole, carbon tetrachloride, tetrachlorethylene and our recently introduced hexylresorcinol. All manner of figures can be found for the percentage of worms removed by these different substances,[2] but we shall make no attempt to hazard an opinion as to which of these drugs is the most effective. All of them will undoubtedly remove a very high percentage of hookworms in a single therapeutic dose if proper precautions are taken for preliminary and after treatment. In mass treatments of thousands or millions, many other complicating factors come in, which cannot be discussed here.

In spite of the fact that Ashford[3] has reported treatment with thymol in one and one-half million cases without a fatality and that enormous numbers of persons have been treated with each of these substances, except hexylresorcinol, all these drugs, with the exception of tetrachlorethylene and hexylresorcinol, are well known poisons producing a definite picture of intoxication in animals, which is similar to that seen in man.[4] The International Health Division of the Rockefeller Foundation has allowed us to go over records of reports on millions of patients treated with all manner of substances in different parts of the world. From these reports, cases cited in the literature and conversations with field workers who have treated thousands of patients, we have obtained a very clearcut idea of the toxic nature of these various substances. Although the death rate may be only 1:40,000 from any of these drugs, the deaths are pathognomonic of each substance, and are not due to extraneous factors. The number of cases of severe intoxication is much greater than commonly supposed. Ashford,[3] in spite of his million and one-half cases without a death from thymol, stated that this drug was becoming very unpopular on account of the number of cases of intoxication, and the description of the proper treatment with thymol in Dock and Bass'[5] book on hookworm disease is anything but reassuring. The worst danger comes from the fact that most cases of poisoning occur apparently from an idiosyncrasy on the part of the patient rather than from an overdose of the drug.

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Bozzolo[6] and his assistants gave as much as 12 and 15 Gm. of thymol; Smillie[7] gave 18 Gm. of betanaphthol; thousands have been treated with 10 and 15 cc. doses of carbon tetrachloride without any greater ill effects than with the customary doses, which are from one quarter to one sixth of these amounts.[8]

For Ascaris only two substances, santonin and oil of chenopodium, were in general use until the introduction of hexylresorcinol. Santonin is relatively ineffective;[9] it causes disturbances of vision in a high percentage of patients,[10] besides very severe cases of intoxication.[11] Oil of chenopodium, as we have pointed out, is a toxic and dangerous substance and is only fairly effective. It is the one substance in this group of which an overdose is almost certain to be fatal.

If one still retains one's faith in the older remedies, thymol, santonin, betanaphthol, oil of chenopodium, its active principle, ascaridole, or carbon tetrachloride, one is bound to run a certain risk of death, a fair chance of collapse, an acute nephritis from betanaphthol, disturbance of vision with santonin, deafness from oil of chenopodium and necrosis of the liver from carbon tetrachloride. It is not remarkable after all that "worming" is generally considered a dangerous procedure. What, then, have we for the treatment of these intestinal helminths?

In this list of three hundred substances referred to in the literature there are in all probability certain ones which would be found much more effective than we imagine, if sufficiently studied, but such is not the case at present and there are to our knowledge only three or four other drugs which are of particular interest to us at present. These are tetrachlorethylene, introduced by Dr. Maurice C. Hall[12] in 1925, ficin, a proteolytic enzyme isolated by Robbins[13] in our laboratory from leche d'higuerón, the sap of the fig tree, hexylresorcinol introduced by us a year or so ago and certain substituted phenols with which we are at present working.

TETRACHLORETHYLENE

To appreciate the value of this substance, one should be familiar with the action of carbon tetrachloride. This was introduced by Hall[14] in 1921, and is thought by many to be the most efficient anthelmintic against hookworm of which we know. We have found in our laboratory that this substance produces a central necrosis of the liver[15] and an accumulation of guanidine in the blood[16] due to a disturbance in liver function. Guanidine is a toxic substance, but its effects are neutralized by calcium which is normally present in sufficient amounts in the body. If for any reason the patient is in a condition of calcium lack at the time of taking carbon tetrachloride, the same amount of guanidine will be formed, but on account of the lack of calcium, a severe intoxication may take place with a lowering of the blood sugar to the convulsive level, hemorrhages, vomiting and death. No deaths have been reported from tetrachlorethylene and we consequently do not know what pathologic changes occur in man, but we have been unable to produce intoxication, microscopic changes in the liver or other organs or chemical changes in the blood in our experimental work in animals[17] and consequently feel that tetrachlorethylene should not be classed with carbon tetrachloride as a toxic anthelmintic.

Tetrachlorethylene is a substance slightly less volatile than chloroform, and naturally if it is absorbed from the intestine, as appears to be the case in man, it will cause a certain amount of dizziness, staggering, etc., similar to that seen from the absorption of alcohol, chloroform or any other anesthetic. This should, however, not be confused with a true intoxication. Tetrachlorethylene appears, therefore, to be an extremely valuable substance for the treatment of uncomplicated hookworm disease.[18] It is thought to be about as effective against hookworm as carbon tetrachloride, but is ineffective against Ascaris, and it remains to be seen whether it will cause the same dangerous migration of these parasites as that which occurs after the use of carbon tetrachloride.

FICIN

The natives of South America have for ages used the sap of the fig tree for the treatment of intestinal parasites. Molloy investigated the action of this substance many years ago,[19] and recently the Caldwells[20] carried out a quantitative study of its action, and found that it was an active anthelmintic. It is of special interest as, besides removing Ascaris, it will remove about 80 per cent of Trichuris as compared with the 20 or 25 per cent removed by most substances[21] and the 40 or 50 per cent removed by hexylresorcinol.[22] Robbins, working in our department, demonstrated that the active principle of this sap is a proteolytic enzyme which digests the parasites.[13] It is nonirritating, and nontoxic, if no lesion of the intestinal tract is present, but if this is the case it may cause dangerous erosion of the mucous membrane. Further work remains to be done before this substance can be recommended for general use, but it may turn out to be of great therapeutic interest.

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HEXYLRESORCINOL

If one looks over the anthelmintics in the groups of monohydric, dihydric and polyhydric phenols, it is surprising to find how many well known anthelmintics fall in these groups: thymol, carvacrol, chavicol, eugenol, estragol, chavibetol, betanaphthol, rottlerin, kosotoxin and filicic acid, besides some twenty-five others.[1] We have been much interested in studying this group, and have thus far carried out experiments with three series of substances. Johnson and Lane[23] first showed that by introducing normal alkyl chains of increasing molecular weights into the resorcinol molecule, the antiseptic power of these substances could be increased. It was later shown by Leonard[24] that the maximum bactericidal effect was reached with a chain of six carbon atoms. A similar increase in bactericidal action has been demonstrated for phenols, guaiacols and cresols by Coulthard, Marshall and Pyman.[25] We have synthesized in our laboratory several members of the series, methyl to normal octyl phenols, and the entire series of these cresols as well as numbers of their isomers and homologues. Dr. Veader Leonard has kindly given us practically the entire series of alkyl resorcinols from methyl to dodecyl. The anthelmintic action of these substances is increased up to the amyl, hexyl, or heptyl compounds in these different series. Beyond this their activity falls off, which may be due to the great decrease in water solubility. Water solubility is, however, not the only factor, as a slight change in position of the alkyl groups, which does not materially alter the solubility, greatly affects the anthelmintic action. Among these substances we have found two which show decided possibilities. The first of these, hexylresorcinol, has been used by us in over twenty-five hundred cases in which we have determined the results in each case by the Stoll egg-counting method.[26] We have found this would remove in single doses an average of from 90 to 95 per cent of Ascaris, from 80 to 85 per cent of hookworm, and from 40 to 50 per cent of Trichuris. We have now treated a small series of patients for pinworm with great success. Several tapeworms have been removed by its use, but enough cases have not been collected to enable us to make a statement regarding its value against this parasite. Our results in hookworm disease and ascariasis have been confirmed in Ceylon, Samoa, Mexico and Guatemala.

Hexylresorcinol is the first anthelmintic that we know of which, for any reason, has been given with the object of absorption from the intestinal tract. Absorption has been feared from all anthelmintics and probably many patients have been killed by overpurging in an effort to avoid absorption of the drug. Hexylresorcinol has for years been administered as a urinary antiseptic in olive oil under the trade name of Caprokol N. N. R. as often as three or four times a day, in doses larger than advised by us in anthelmintic work, over periods of weeks and months with no reported case of intoxication,[27] in spite of its having been given to people in extremely poor health, with all types and degrees of genito-urinary disturbances. We have shown quantitatively that approximately 30 per cent of the hexylresorcinol taken by mouth is absorbed and excreted quickly in the urine as the ethereal sulphate, the remainder is excreted unchanged in the stool.[28] Little, if any, is retained or utilized by the body. With extremely delicate tests, we have been unable to find any trace of this substance in the blood, liver or other organs of the body after its oral administration. It must, therefore, be rapidly excreted and is never present in high concentrations in the body. We have been unable to find reports of any intoxications following its use even after tremendous doses. Hexylresorcinol can be considered as a substituted phenol and probably does not cause the same type of intoxication as resorcinol and phenol on account of its very low solubility.

This substance would be an almost perfect anthelmintic if it were not for two unfortunate properties. The first of these is that it combines with protein readily and is relatively ineffective if taken when food is present in the stomach or intestines. In mass treatments, in which a large number of persons are certain not to follow directions, many will come for treatment with food in the intestines and the results will be found disappointingly low. The other unfortunate property is the local irritating action of hexylresorcinol. It causes a certain amount of irritation in the stomach which, however, can be considered negligible. Most patients have no symptoms whatever after taking hexylresorcinol, while a few may show a slight gastric irritation, and in rare cases, chiefly when they have eaten against advice, the patients may vomit. We have treated whole schools with this substance early in the morning. The children have gone on with their daily work without any difficulties whatever, and all have willingly returned for a second treatment if such tests were carried out, which indicates that they minded the first treatment little, if any. Hexylresorcinol crystals cannot be taken by mouth unless protected in some way, as they cause a local "burn" of the mucous membrane. This substance is too insoluble to be given in water solutions; it is inactive in oil and it decomposes gelatin capsules. After many experiments, Sharp & Dohme, who supplied us with hexylresorcinol, devised a sugar-coated pill of hexylresorcinol which we have given to six or seven hundred patients with great success. These pills have also been used by others in field treatments with equally good results.[29] When these pills were put out by Sharp & Dohme for general use with instructions that they should not be chewed, it was soon found that physicians would order the pills and the apothecary would give them to the patients or to the parents in a box with no precautionary directions. Parents would then administer these pills to children, many of whom could not swallow them, and consequently chewed them up; the result was that they burned their mouths, which gave a very shocking appearance, the mucous membrane turning white and small shreds of epithelium peeling off. All these burns were, however, entirely superficial and were recovered from without any injury after a day or so. As hexylresorcinol has a local anesthetic action, the burns caused no particular inconvenience to the patients except for the local anesthetic effect. Sharp & Dohme, who control this substance, have been so bothered by complaints of children chewing up the pills that we understand that hexylresorcinol has been withdrawn from the general market although it is still supplied to health boards. It would seem a pity if this really useful substance could not be used by the medical profession merely on account of failure on the part of the physicians to administer it properly. Any physician can give these pills to an adult and see that they are swallowed without being chewed, and he can personally administer them to children if they cannot swallow pills. Because of its action on both Ascaris and hookworm, hexylresorcinol can be used in mixed infestation, but on account of the local irritating property, it is not an ideal general vermifuge and probably would continue to cause these local burns if widely distributed without medical supervision among people who refuse to follow directions. It is possibly the most effective substance known against Ascaris, well over 90 per cent having been shown by actual egg count to have been removed in our series of over two thousand cases. We believe that if given properly, it may continue to give results which compare favorably with other substances against hookworm. Every worm has been removed in some schools in which the children were given single treatments. In our last group of 263 cases of ascariasis, 197 or 75 per cent became negative after the first treatment, with a total reduction of 90 per cent in the egg count, while 42 patients treated twice showed 93 per cent negative and a 93 per cent reduction in egg count. *We wish to state emphatically that we are not attempting to compare hexylresorcinol, which has been used in only a few thousand cases, with these other substances which have been given to millions of patients. We are merely stating what has been found by us in our own experiments.*

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[28] Robbins, B. H.: [illegible] Studies on the Absorption and Excretion of Hexylresorc [illegible] under Different Conditions, J. Pharmacol. & [illegible] (Oct.) 1931. Robbins, B. H., and Wesson, L. G.: A Method for the Quantitative Determination of Hexylresorcinol in Tissues, Blood and Excreta, ibid. **43**: 335 (Oct.) 1931.

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6-n-HEXYL-META-CRESOL

The local irritating action of hexylresorcinol is characteristic of phenols and resorcinols and led us to a study of other substituted phenols in the hope of finding one with less irritating action, less reaction with protein but a similar activity on the parasite; 6-n-hexyl-meta-cresol appears to have such properties.[26e] It is a liquid, which would make it easier for children to take than the hexylresorcinol pills; it reacts less with protein than hexylresorcinol; it is decidedly less irritating in the mouth and stomach than hexylresorcinol; in fact, a mouthful of this substance can be taken without producing any visible change in the mucous membrane. It causes practically no irritation of the stomach, and no greater irritation when taken with alcohol than when given alone. This is a property of decided importance. Our toxicity experiments in animals indicate that 6-n-hexyl-meta-cresol will be no more toxic than hexylresorcinol, but we are not quite ready to advocate its use in human beings. We hope, however, that this may be a useful clinical substance and that further investigation of this group of phenols will bring forth an anthelmintic which is so safe, effective and cheap that it can be generally distributed throughout the world in every community infested with these unwelcome visitors, so that finally, after sufficient education on the part of the medical profession, people can rid themselves of these parasites by self-medication without danger of intoxication.

ABSTRACT OF DISCUSSION

Dr. W. G. Smillie, Boston: Those who have had experience in the actual treatment of intestinal parasites realize how important this investigative work has been. Some no doubt have stood at the bedside of a child with the coma and intention tremor so characteristic of oil of chenopodium poisoning. The condition began with dizziness and a headache, followed by nausea, and then the child became comatose, and finally the jerking of the arms and legs began and kept up for hours. Finally, the child died. Oil of chenopodium had been given with the best intentions in the world. A toxic dose had not been given, but the child died. Those who are treating hundreds of thousands of children know with certainty that, if oil of chenopodium is used, sooner or later there will be a fatality with a normal dose. Carbon tetrachloride was welcomed, for it seemed to be effective and relatively nontoxic. But it soon proved disappointing because again it was found that in some instances, for some unknown reason, the individual died from very small doses of the drug. The authors showed why patients died from carbon tetrachloride poisoning, but they went still further. The various drugs that have been developed on a more or less empirical basis and used in the treatment of intestinal parasites have been effective, it is true, but in certain instances they have been toxic. The margin between the effective therapeutic dose and the toxic dose was often so close that even though one watched every detail of treatment as carefully as one could, sooner or later one had a fatality. The authors have gone about their anthelmintic studies in an original way. They have studied various combinations of drugs, synthesizing here, subtracting a radical there, attempting to develop the perfect vermifuge that will remove all intestinal parasites in a single dose, without inconvenience to the patient. They have been phenomenally successful. Perhaps they may have a better vermifuge next year. Certainly they have already developed a vermifuge that is effective and relatively nontoxic.

Dr. Paul D. Lamson, Nashville, Tenn.: Some of the drugs in common use are really dangerous substances. I have talked with many people who have treated four or five thousand patients without a death from oil of chenopodium and who simply will not believe that these are dangerous substances. When, however, one reads of a woman coming to a clinic, being given thymol, and then starting to walk 100 yards to her house and when about 50 yards away collapsing and falling, although she was perfectly well when she left the clinic, one realizes what very dangerous substances these drugs are. The trouble with them is that one simply cannot tell when intoxication is going to appear. Most of these intoxications are due to idiosyncrasies and not to overdose. Overdosage of most anthelmintics with the exception of chenopodium has not been followed by death ordinarily. Dr. Smillie was complimentary about the results obtained with hexylresorcinol. It ought, however, to be remembered that although we have carefully checked with egg counts 2,500 cases the number of patients treated by us is small compared with the thousands and millions that have been treated with other anthelmintics. It is not yet time, therefore, to say that an actual advance has been made, but it is interesting from both a pharmacologic as well as a practical point of view to realize how many related chemical substances can be made, among which the ideal anthelmintic may yet be found in the laboratory. Certainly there is hope in the future of pharmacology.

Tuberculous Hemoptysis.—Pulmonary hemorrhage, when investigated on the postmortem table, is found to proceed from the wall of an old cavity in the affected lung, usually a thick, firm, fibrous wall, showing little evidence of active disease, but well organized granulation tissue with marked evidence of contracting scar and tension effects resulting from it.—Bogen, Emil: *American Journal of Clinical Pathology*, July, 1932.

THE ISOLATION OF BRUCELLA ABORTUS FROM TONSILS

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Undulant fever is now a well established disease of man, but much information is wanting concerning its diagnosis, modes of infection, pathology and treatment. There are those who like to believe that Brucella abortus gains entrance to the body only through wounds, while others prefer to accept the digestive tract as the common channel through which the invasion occurs. Undoubtedly, both routes are vulnerable. Soon after Brucella abortus was discovered in raw cow's milk, Mohler and Traum[1] became interested in determining whether the organism was pathogenic for man. They infected guinea-pigs with extracts from fifty-six tonsils and adenoid tissue removed from children who had drunk raw milk. They reported finding typical lesions of the disease in one guinea-pig, from whose liver, spleen and testes Brucella abortus was isolated.

In studying the effect of feeding milk artificially and naturally infected with this organism to calves, the senior author[2] observed that the lymph nodes draining the mouth and pharynx became infected first and remained infected the longest of any of the tissues examined. This observation on calves suggested a further study of diseased tonsils from man.

In 1926, examinations on fifty-five pairs of tonsils were made at Ithaca, N. Y.[3] A study of the tonsils from a patient with undulant fever, from the Medical Service at the Strong Memorial Hospital, Rochester, N. Y., has recently been made.

TECHNIC

The tonsils were removed by surgeons after such clinical diagnoses as abscess, hypertrophy, chronic tonsillitis, rheumatism, endocarditis and arthritis had been made. Each pair of tonsils was placed in a closed sterile jar immediately after operation and brought to the laboratory, where each tonsil was transferred with a sterile pair of forceps to a sterile petri dish and described. Cultures were made after the surface of the tonsil had been seared with a hot spatula. Bits of the tissue or any purulent exudate were transferred to an infusion agar to which sterile horse serum had been added. The tubes were then placed in a jar in which 15 per cent of the air had been replaced with 10 per cent carbon dioxide and incubated at 37 C. for four or five days.[4] After forty-eight hours' incubation, abortus-like colonies were fished from the growths on the agar slants and replated. Final identification was made by the agglutination and the agglutinin absorption tests.

The remainder of the tonsil was ground in a sterile mortar with 5 cc. of sterile physiologic solution of sodium chloride, which made a very heavy extract. A guinea-pig was injected subcutaneously with 1 cc. of the extract. The guinea-pigs were killed and examined for evidence of Brucella abortus infection from five to six weeks after injection. An agglutination test was made on the guinea-pigs' serum for abortus agglutinins. The tissues were examined for lesions of the disease and cultures made from the spleens and livers, as well as from other organs when they showed suggestive evidence of the infection. Cultures were identified as Brucella abortus by the same methods as heretofore mentioned. The results of these examinations revealed Brucella abortus in either one or both tonsils from eight of the fifty-six patients. In three patients, Brucella abortus was recovered from both tonsils, while in the other five it was obtained from only one. The accompanying table summarizes the eight cases from which the organism was isolated. The protocol of case 8 is as follows:

History.—A white woman, aged 60, married, housewife, was admitted to the Strong Memorial Hospital, Jan. 17, 1932, with a chief complaint of intermittent fever. About six weeks prior to admission she noted that she felt weak and that much effort was required to complete her housework. About two weeks before the onset of her general malaise she had returned from an automobile drive through the New England states. Dec. 20, 1931, she felt definitely ill, and her temperature was elevated 1.5 degrees C. A daily record of her temperature showed that it was normal in the morning, rose during the day, and reached a maximum of from 38.5 to 39 C. (101.3 to 102.2 F.) during the late afternoon and evening. The patient felt worse during the height of the fever, perspired freely, and had frequent headaches. At night, sweating continued. She felt weak on awakening in the morning. These daily remissions of fever continued until the patient entered the hospital. Despite a good appetite, a gradual loss of weight occurred. Other symptoms noted during the febrile period prior to admission were a slight sore throat for two or three days at the beginning of the illness, marked soreness of both breasts for two days after fever was definitely established, and abdominal distress for two days one week prior to admission. This consisted of a sense of fulness, a dull ache across the upper part of the abdomen, gas and pyrosis beginning two or three hours after meals. Her local physician, Dr. L. F. Waters of Medina, N. Y., suspected undulant fever and his diagnosis was confirmed by an agglutination test on the blood serum. She was therefore admitted to the hospital. The past history was irrelevant. The family history was irrelevant. No other members of the household, consisting of her husband and several farm laborers, were ill.

The patient had always lived on a dairy farm. She had had no direct contact with animals but drank moderate amounts of raw milk and cream. There were no sheep, goats or swine on the farm. The cattle supplying the milk had never been tested for infectious abortion, but clinically the abortion disease had not been prevalent. However, it must be remembered that clinical evidence is of little value in determining the absence or presence of Brucella abortus infection in animals.

Examination.—The temperature was 38.4 C. (101.1 F.); the pulse rate, 102; respiration, 20. The blood pressure was 105 systolic and 70 diastolic. The patient was well developed but somewhat obese. She was somewhat dyspneic and definitely ill but showed no marked signs of distress. The skin and mucous membranes were normal in texture and color.

The following observations were made: A widely distributed varicosity of the superficial veins appeared on the left leg. Below the knee there was some evidence of an inflammatory reaction in some of the veins. Hearing on the left side was impaired. There was marked sclerosis of the arteries of the fundi of the eyes. The throat was injected and the tonsils were cryptic and scarred but very large, especially the right tonsil, which was red and showed punctiform hemorrhages. Both showed evidence of infection along the anterior pillars. The tonsillar lymph nodes in the neck were large and tender. There were persistent coarse râles at the posterior base of each lung. A loud systolic murmur was heard over the entire precordium. The peripheral vessels were moderately sclerotic. The spleen was not palpable.

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[1] Mohler, J. R., and Traum, Jacob: Twenty-Eighth Annual Report of the Bureau of Animal Industry, U. S. Dept. of Agriculture, 1911, p. 147.

[2] Carpenter, C. M.: Cornell Veterinarian **15**: 16, 1924.

[3] Annual Report of the New York State Veterinary College, 1926-1927, p. 45.

Blood examination revealed: red blood cells, 4,950,000; white blood cells, 6,200; hemoglobin, 80 per cent. Differential: polymorphonuclear leukocytes, 60 per cent; basophils, 1 per cent; eosinophils, 1 per cent; lymphocytes, 25 per cent; mononuclears, 13 per cent. A repetition of the leukocyte count, January 22, gave 5,750. The electrocardiogram was normal. The Wassermann reaction was negative. A blood culture was negative. Examination of the urine and the stool gave negative results.

An agglutination test with Brucella abortus and Brucella melitensis was positive, 1:5,120.

A roentgenogram showed an enlarged left ventricle of the heart and tortuosity of the aorta.

Course.—The temperature made daily excursions from 37 to 39 or 39.5 C. (from 98.6 to 102.2 or 103.1 F.). The patient's only complaints were a mild sore throat, for which hot saline gargles were given, and some pain in her left leg from the varicosities. The latter condition was treated by an elastic stocking, ice packs, and elevation of the leg. Tonsillectomy was advised. The patient remained in the hospital from Dec. 29, 1931, to Jan. 23, 1932, when she was discharged to her home until the fever subsided, after which she was to return for tonsillectomy.

Summary of Cases from Which Brucella Abortus Was Obtained

Patient	Date	Sex	Age Years	Occupation	Clinical Diagnosis	Description of Tonsils	Bacteriologic Culture	Bacteriologic Guinea-Pig	Comment
1 B. S. R.	6/ 7/26	♀	22	University student	Chronic sore throat and tonsillitis, six months	Right tonsil 1.5×1.5×1 cm.; abscess 0.5 cm. in one end; smaller abscesses 1-2 mm. scattered throughout tonsil tissue; Brucella abortus isolated; left generally enlarged but not abscessed	+	+	Lived on farm except when attending university; had always drunk large quantities of raw infectious milk
2 C. E. P.	6/ 7/26	♀	19	University student	Frequent colds and tonsillitis	The tonsils appeared similar; slightly enlarged and contained few 1-2 mm. abscesses; Brucella abortus isolated from only one tonsil	..	+	Drank moderate amount of raw milk known to contain Brucella abortus
3 E. T.	10/ 5/26	♀	4	Child	Obstructive tonsils and adenoids with cervical adenitis	The tonsils appeared similar; 1.5×1×1 cm.; small abscesses, 1-2 mm., throughout tissue; Brucella abortus isolated from each tonsil	..	+	Had been raised on raw milk after 1 year of age; supply child was given for several months prior to date of operation contained Brucella abortus
4 R. L.	10/ 6/26	♂	43	Farmer	Chronic tonsillitis	Tonsils slightly enlarged; one tonsil had small abscess 3 mm. at end; other tonsil from which Brucella abortus was recovered contained many small abscesses, 1-2 mm.	+	+	Herd was infected with Brucella abortus; drank milk from infected cattle
5 R. B.	10/11/26	♂	4	Child on farm	Enlarged tonsils with cervical adenitis	Tonsils similar; showed general enlargement; 2×1.5×1 cm.; Brucella abortus isolated from one tonsil only	..	+	Lived on farm and drank raw milk
6 J. S.	11/ 5/26	♂	23	University instructor	Subacute endocarditis and pulmonary tuberculosis	Tonsils not described; Brucella abortus isolated from one tonsil	..	+	Drank raw milk known to contain Brucella abortus; died approximately two years after tonsillectomy; cause of death unknown
7 D. D. M.	12/17/26	♂	20	University student	Sore throat and rheumatism	Tonsils greatly enlarged and abscessed; right 2.5×2×1.3 cm.; one abscess 3 mm. in diameter; Brucella abortus recovered; left 2.3×2×2 cm.; one abscess 4 mm. in diameter	..	+	Drank raw milk known to contain Brucella abortus; had been confined to bed several weeks with rheumatism (joint and muscle pains); symptoms disappeared shortly after tonsillectomy
8 G. A.	2/27/32	♀	60	Housewife on farm	Undulant fever; chronic tonsillitis; thrombophlebitis inner aspect right thigh; arteriosclerosis, general	Tonsils 2×1×1 cm. moderate size; scarred; crypts contained much pus; Brucella abortus isolated from both tonsils	—	+	See case report

February 8, the patient was readmitted. She steadily improved for ten days at home and became afebrile. However, two days prior to admission she again noted a fever similar to the type described, with a maximum point of 39 C. (102.2 F.). The varicosities of her left leg again became painful.

Physical examination at this time revealed that the tonsils were not as acutely inflamed as on first admission and that the submaxillary lymph nodes were not enlarged. The other observations were approximately the same as before, with the exception of an anal fistula.

Blood examination revealed: red blood cells, 3,850,000; white blood cells, 5,200; hemoglobin, 70 per cent. The differential count was approximately the same as on the first admission.

The patient became afebrile one week after admission, at which time she developed a mild cystitis. B. coli was isolated from the urine. Following alkaline medication and forced fluids, the urinary symptoms subsided.

February 16, a sample of urine was centrifugated and injected into guinea-pigs for Brucella abortus infection; the result was negative. A stool was likewise examined for *Brucella abortus* by the Amoss method with the following modification: The agglutinated material was injected into guinea-pigs instead of cultured on Huddleson's dye medium; the result was negative.

February 18, the patient was given an intracutaneous injection of 0.2 cc. of killed culture of Brucella abortus suspension (approximately one billion organisms per cubic centimeter) on her left forearm.

February 20, the reaction was positive. There was a large, red, hot and painful area 7 by 11.5 cm. at the point of injection.

February 27, tonsillectomy was done. The tonsils were of moderate size, scarred and adherent. Recovery was uneventful.

The pathologist reported that microscopic section of the tonsils showed deep crypts containing small amounts of granular material. Polymorphs and round cells were abundant in the adjacent connective tissue. The injection of an extract from half of each tonsil into guinea-pigs resulted in typical *abortus* infection. The lesions produced were identical with those resulting from the injection of such experimental animals with bovine strains of Brucella abortus.

March 5, the patient was discharged from the hospital.

June 15, a communication from the patient stated that she had been afebrile since leaving the hospital and was feeling extraordinarily well.

COMMENT

It is difficult to evaluate the significance of the observations in the table. With the exception of case 8, the examinations were made at Ithaca, N. Y., five years ago, when most of the city's milk supply was unpasteurized and examinations of the raw milk showed that the mixed milk from nine of fifty herds examined contained Brucella abortus. Extremely virulent strains of the organisms were present in the milk from two of the infected herds that supplied a large percentage of the raw milk.

With the exception of patient 5, the patients from whose tonsils Brucella abortus was isolated had drunk raw milk known to contain Brucella abortus. Patient 5 was a child who lived on a dairy farm, but we were unable to obtain information concerning this herd or to examine the milk. However, many of the group from whose tonsils Brucella abortus was not isolated had consumed milk from the same infectious source. The amount of milk drunk by these persons, their resistance, and the number of abortus organisms in the milk are factors concerning which there is little, if any, accurate information. It may be that the recovery of Brucella abortus from the tonsil tissue was only a coincidence and its significance similar to that of the occasional finding at the same time of a few colon bacilli in such tissues. However, the data submitted concerning case 8 indicates that the tonsils were a probable focus for the infection. In most cases studied, many other bacteria were isolated in culture, chiefly streptococci and staphylococci. In the first case reported in the table, practically a pure culture of Brucella abortus was obtained, but a few colonies of Staphylococcus aureus were present. No attention was paid to such organisms. No doubt the failure to obtain Brucella abortus in culture from five of the seven cases was due to the presence of more rapidly growing types of bacteria. Two of the strains of Brucella abortus were examined by Dr. Wayne N. Plastridge of the Connecticut Agricultural College at Storrs, Conn. He designated the culture isolated from case 1 as a porcine type, while case 7, according to his observations, was of bovine origin. His determinations were based on the utilization of dextrose and on Huddleson's dye plate method.[4]

We do not desire at this time to convey the impression that Brucella abortus is a cause of tonsillitis or of hypertrophied tonsils. Nevertheless, in experimental and domesticated animals the infection localizes in lymph and lymphoid tissue, frequently producing a focal or general lymphadenitis, as well as a splenitis. At the onset of many cases of undulant fever there is a reddening and injection of the fauces, pharynx, tonsils and peritonsillar tissue, not unlike that seen in an acute infection of the upper respiratory tract. Cervical adenitis is not uncommon. That these pathologic changes are specific of Brucella abortus infection is not known. The organism may invade the tonsil and multiply or accumulate there until the resistance of the host is decreased from fatigue or from disease, permitting its invasion of the blood stream.

The patients whose tonsils were examined could not be followed closely. Exclusive of patient 8, the cases that gave tonsil cultures of Brucella abortus, so far as we know, had not shown evidence of undulant fever before or after operation, although no accurate histories were taken. There is a possibility that the endocarditis in case 6 may have been due to Brucella abortus, as has been observed especially in fatal cases of undulant fever. There is likewise a possibility that the so-called rheumatism in case 7 was undulant fever with a localization of the infection in the joints, which is frequently observed in this disease. The sex, age and occupation have no significance, because in the group of forty-eight persons not showing Brucella abortus in the tonsils were many young adults and children using the same raw infectious milk supply as did the four university students from whom positive cultures were obtained.

The most important deduction is that the presence of the organisms in the tonsils must be the result of ingesting dairy products containing Brucella abortus. The incidence of positive results undoubtedly depends on the virulence and the numbers of Brucella abortus in the raw milk supply. King[5] examined forty-nine pairs of tonsils collected from patients in the vicinity of Saratoga Springs, N. Y., using a technic similar to that used by us, and failed to find any evidence of Brucella abortus. Poelma and Pickens[6] of Maryland recently reported finding two pairs of tonsils infected with Brucella abortus from a total of 116 cases.

CONCLUSION

Brucella abortus has been isolated from eight of fifty-six pairs of tonsils.

Crittenden Boulevard.

Clinical Notes, Suggestions and New Instruments

ACTINOBACILLUS BACTEREMIA

Luther Thompson, Ph.D., and Fredrick A. Willius, M.D.
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A man, aged 26, a butcher, who stated that he had had no previous illnesses, came to the Mayo Clinic, Oct. 19, 1931. The family history had no bearing on his illness. He was born in Germany and resided there until he came to this country, at the age of 14 years. Five years before his registration, while he was cutting meat, his knife slipped and entered his right thigh; this wound healed without infection but resulted in an arteriovenous aneurysm. He apparently was in normal health until Aug. 8, 1931. On that day, he felt tired and complained of a dull headache, and felt chilly during the day in spite of the fact that it was very warm weather. He continued with his work, and at 11 p. m. he collapsed in his shop. A physician found that his temperature was 103 F., and he was taken home and placed in bed. He continued to feel bad for three or four days, but the fever gradually disappeared, and on the fifth day he felt well enough to resume his work. August 13, while he was cutting beef, his knife again slipped and he

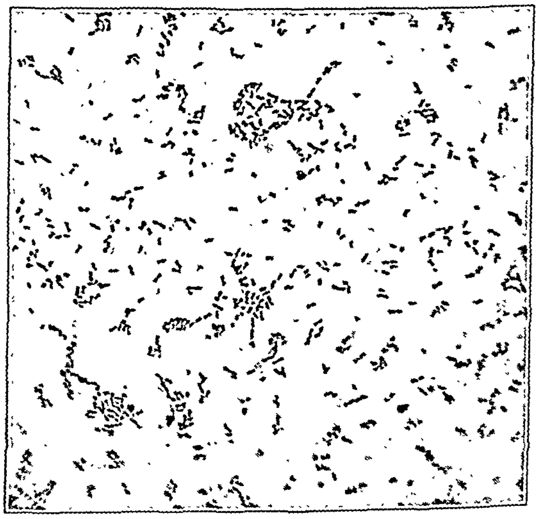

Fig. 1.—Actinobacillus from plain agar slant, twenty-four hours. Gram stain.

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[4] Huddleson, I. F.: Undulant Fever Symposium, Tr. Am. Pub. Health A., 1929, p. 18.

[5] King, M. J.: New England J. Med. **201**: 918 (Nov. 7) 1929.

[6] Poelma, L. J., and Pickens, E. M.: J. Bact. **23**: 112 (Jan.) 1932.

From the Section on Clinical Pathology and the Section on Cardiology, the Mayo Clinic.

received a superficial cut on the anterior abdominal wall. The wound healed again promptly, but in a few days he began to have an irregular fever, ranging from 99.6 to 102 F., and this continued to the time of his admission to a hospital associated with the clinic, October 19. He had been in bed ten weeks prior to his arrival at the clinic. His appetite had been poor, he had lost strength, and his weight had been reduced from 170 to 128 pounds (from 77 to 58 Kg.). He also complained of aching pain in the muscles of the limbs and in other muscles. He stated that his shop dealt chiefly in meats that were subjected to federal inspection, but occasionally carcasses were obtained that did not receive federal inspection.

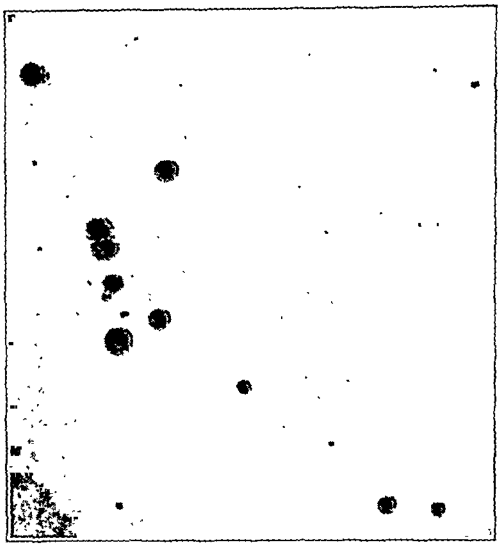

Fig. 2.—Actinobacillus: colonies on plain agar; culture 5 days old.

The patient was emaciated and sallow; his temperature at the time of admission was 100 F. His tonsils were of the buried type. There was a small right femoral arteriovenous aneurysm. The blood pressure was 125 systolic and 55 diastolic in millimeters of mercury; the pulse rate was 116 beats each minute. In the urine there were occasional erythrocytes, and in one specimen there was a faint trace of albumin. The concentration of hemoglobin was 70 per cent by the Dare method; erythrocytes numbered 4,030,000 and leukocytes from 12,100 to 16,400 in each cubic millimeter of blood. The differential count was almost normal. There was 14 mg. of urea for each 100 cc. of blood. Blood culture revealed a peculiar gram-negative bacillus. A number of other examinations and tests made in the attempt to exclude certain clinical conditions were negative.

The patient remained under observation at the clinic for twenty-four days and during this time had an intermittent, irregular fever ranging from 99 to 100 F. for ten days. In the second week of observation a transient left pleural rub developed, accompanied by pain, which disappeared twenty-four hours later and did not again reappear. There was no evidence of other visceral involvement at any time.

On the basis of the long history of intermittent fever we at first considered the possibility of subacute bacterial endocarditis, but in the absence of a previous history of rheumatic fever, of a demonstrable valvular lesion or of embolic phenomena, and in the presence of the peculiar organism obtained by blood culture, the diagnosis of subacute bacterial endocarditis was dismissed. Undulant fever was eliminated by the negative agglutination test. Absence of splenomegaly and rose spots, and the presence of low temperature at the time of our observation, and of negative blood culture for Eberthella typhi quite clearly eliminated typhoid from the diagnosis. The final diagnosis in the case was bacteremia resulting from Actinobacillus.

TREATMENT

The patient was given saturated solution of potassium iodide in doses of 15 minims (1 cc.) three times a day, and was dismissed from our care on the twenty-fourth day. We do not feel that the medication played any material part in the patient's recovery. He has apparently recovered completely. In a letter received from him in February, 1932, he stated that he is feeling well and has returned to his work.

BACTERIOLOGIC STUDY

Four consecutive blood cultures, taken, respectively, October 20, 23 and 27 and November 9, were positive and contained what appeared to be the same organism. At first, the number of colonies in each cubic centimeter of blood was about 20, but the number had decreased to 1 colony in each cubic centimeter at the time of the last culture. At the end of forty-eight hours of culturing, the colonies were from 2 to 5 mm. in diameter, flat, round, and with slightly irregular margins. The larger colonies presented a curiously wrinkled appearance, with a radial arrangement which divided them into five or six sectors, after the manner in which a pie is cut. The consistency was membranous and moist; an entire colony could be removed by pulling at one edge. The growth in broth was much poorer and after several days consisted of flocculi, near the top of the tube or caught within the fibrin formed from the blood.

Morphologically the organisms were rather small, bipolar, gram-negative bacillary forms with an occasional chain of two or three elements (fig. 1). In subculture, growth was readily obtained on nutrient agar and broth, but it was less profuse than when blood was added (figs. 2 and 3). Cultures on nutrient agar slants, made from the primary growth, resulted in a dry, crusty growth after eight to ten days, but this characteristic was lost after several generations of stock culture had been kept on blood agar. Broth cultures were turbid, with a pellicle and sediment. Growth was poor in nutrient gelatin. Liquefaction did not occur in three weeks at 37 C. Motility was negative in twenty-four hours in broth cultures. Ehrlich's test for indole was weakly positive after four days in nutrient broth. Sugar fermentation tests were negative after three weeks, except for a slight acidity in dextrose, maltose, mannite and saccharose. Growth on potato was poor or failed entirely.

The results of inoculation of animals were for the most part negative. Rabbits were killed in less than twenty-four hours by from 1 to 2 cc. of a moderately heavy suspension given intravenously, without the production of any gross lesions. Subcutaneous inoculations gave negative results. Intraperitoneal inoculation of guinea-pigs with about the same amount of culture either resulted in death within twenty-four hours, from general peritonitis, or in recovery after a short period, with the following exception: One guinea-pig, after receiving 2.5 cc. of suspension intraperitoneally, appeared ill for two days, and then seemed to be recovering on the third and fourth days. The animal was then killed and examined, and evidence of resolving peritonitis with pustular nodules on the omentum and adhesions to the liver was found. The Strauss reaction

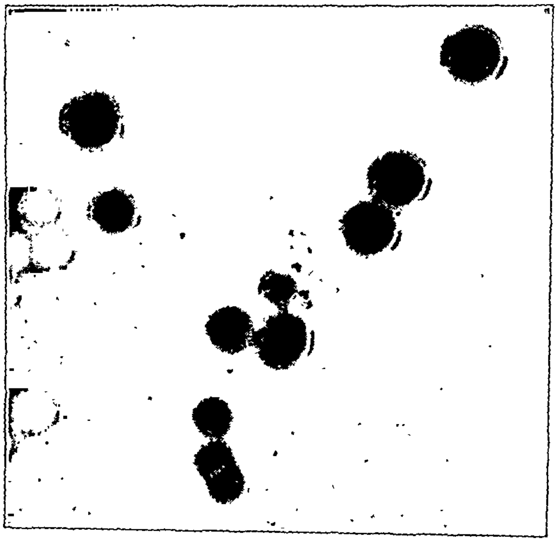

Fig. 3.—Actinobacillus: colonies on blood agar; culture 5 days old.

was not obtained, although care was taken to use male guinea-pigs in all instances.

Serologic tests gave the following results: The patient's serum agglutinated the organism from his blood in a dilution of 1:80. His serum also gave a very strong complement fixation reaction with Pfeifferella mallei antigen. Agglutination tests were negative for Alcaligenes abortus, Pasteurella tularensis, and organisms of the typhoid-paratyphoid group. In order to compare the cultural and serologic characteristics of the organism with those of Actinobacillus lignieresi, a culture of the latter was sought. Since no cultures of this organism were available in this country as far as could be learned, an attempt was made to isolate one from bovine material. With the coöperation of Swift and Company and the meat inspection service of the Bureau of Animal Industry in St. Paul and Chicago, bovine material was obtained and several cultures were isolated which resembled closely the published description of Actinobacillus lignieresi and also the strain isolated from the patient. Rabbit immune serums prepared with certain of the bovine strains agglutinated the human strain, and conversely the immune serum prepared with the human strain agglutinated certain of the bovine strains. We have therefore concluded that the organism in question is Actinobacillus lignieresi, an idea which seemed the more probable on account of the recent occupation of the patient and the history of his having cut himself while engaged in his work.

COMMENT

The actinobacillus was described in 1902 from South America by Lignières and Spitz[1] as the causative agent of a disease of cattle which simulated actinomycosis. It has been reported from Canada and various European countries as a disease of cattle, but, as far as we have been able to determine, it has not been reported from the United States. One previous case of actinobacillus infection of man has been reported by Ravaut and Pinoy[2] in France. This was a case of meningitis, and the patient recovered. It seems unlikely that the case of meningitis reported by Gerdine and Pease[3] in this country was due to the actinobacillus, since their organism was evidently anaerobic and the actinobacillus is primarily aerobic.

The relationship between the actinobacillus and the organism of glanders is not known. They bear a strong resemblance to each other culturally, and according to preliminary tests there is some indication that they may be related serologically. It seems probable that actinobacillosis of cattle is prevalent in this country, an idea which is being investigated more fully.

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[1] Lignières, J., and Spitz, G.: Contribution a l'étude, à la classification et à la nomenclature des affections connues sous le nom d'actinomycose, Centralbl. f. Bakt. **35**: 294-308; 452-458, 1904.

[2] Ravaut and Pinoy: Actinobacillose à forme meningée observée à Paris chez un Argentin, Presse méd. **1**: 49-50 (Jan. 21) 1911.

[3] Gerdine, Linton, and Pease, Dorothy: Actinobacillus Meningitis, Am. J. Dis. Child. **32**: 878-888 (Dec.) 1926.

ACTINOBACILLUS BACTEREMIA

A SUPPLEMENTARY REPORT

Walter Lawrence, M.D.; Irene Neuhauser, M.D., and Katharine M. Howell, M.D., Chicago

This is a report of the treatment and further study of the case of actinobacillus bacteremia reported by Thompson and Willius in this issue. Since the recovery of the patient was obviously due to the therapy used, it seems advisable to make this report.

The patient referred to first presented himself at our office, Aug. 29, 1931. He stated that he had suffered with influenza for the preceding two weeks. The symptoms were intermittent fever, chills, profuse perspiration, especially at night, and severe migratory pains in the chest, joints and muscles. This was also accompanied by some abdominal discomfort and by diarrhea. At the time of this examination the patient was moderately sick. His temperature was 102.4 F.; the pulse was 108, and respirations were 32. The ears and nose showed no pathologic condition; the tonsils were moderately hypertrophied and the pharynx was injected. There were no signs of hyperthyroidism. The lungs were hyperresonant, with a few scattered moist râles. There was a slight systolic murmur, heard best over the apex, with a markedly accentuated second sound. The heart was not appreciably enlarged. There was some tenderness over the abdomen. The liver and spleen were not palpable and there were no palpable masses in the abdomen.

A tentative diagnosis of rheumatic endocarditis was made, and the patient was ordered to bed and treated symptomatically.

During the next two weeks the patient's temperature was irregular, ranging from 98 to 103 F., higher at night, and accompanied by profuse perspiration.

For the two succeeding months the patient was not under our observation, but from the history obtained from the patient and from the physician who saw him, there was apparently little change in the course of the disease. There were slight remissions which lasted for a few days only, to be followed by other acute attacks.

October 19, the patient entered the Mayo Clinic, where Thompson and Willius established the diagnosis of actinobacillus infection.

November 23, when the patient was next examined by us, the symptomatology was practically unchanged. The white blood cell count was 13,750; red count, 4,500,000; hemoglobin, 80 per cent. The differential count showed 73 per cent neutrophils, 26 per cent lymphocytes, and 1 per cent basophils. A chest roentgenogram and an electrocardiogram were negative. The basal metabolism was plus 5. Blood cultures were repeatedly positive for a small gram-negative organism. The temperature was still irregular and the pulse remained about 100.

On the night of December 14, one of us was called to the house to see the patient. In the few hours preceding he had developed excruciating pains across the chest and was expectorating blood-tinged sputum. The temperature was 103, the pulse rate was 130 and respirations were 48. The patient was immediately hospitalized and given emergency treatment. The next day he had apparently recovered from this acute attack.

While at the Mayo Clinic the patient had been put on potassium iodide, and on his return home this therapy was continued. After the acute attack the potassium iodide was discontinued and intravenous injections of sodium cacodylate, 0.45 Gm., were given on alternate days.

At the end of two weeks the patient was able to return to his home, and for the following eight weeks he received weekly one injection each of neoarsphenamine and sodium cacodylate (0.3 Gm. and 0.45 Gm., respectively). Four days after this therapy was begun the patient's temperature dropped to normal. From this time the temperature has ranged from 96-97 F. in the forenoon to 98-98.6 in the afternoon. The cardiac manifestations have gradually subsided and at present the heart sounds are normal. The muscular and precordial pains have also disappeared.

BACTERIOLOGY

After the patient had returned from the Mayo Clinic with the diagnosis of a hematogenous infection with the actinobacillus, he was sent to the Nelson Morris Institute for blood cultures. Here an entirely independent study of the patient's blood was made. The first culture, November 25, yielded a small, pleomorphic, gram-negative, nonmotile, non-spore forming bacillus that was apparently identical in its morphologic and cultural characteristics with the actinobacillus described by Ravaut and Pinoy[1] and by Lignières and Spitz.[2] A second blood culture, Jan. 5, 1932, after the patient had had a relapse, again contained this bacillus, but blood cultures on February 22 and March 21, after the patient had been treated with sodium cacodylate and neoarsphenamine, remained sterile.

Each time that blood was taken for culture, a few cubic centimeters was reserved for agglutination tests. The agglutination reactions were apparently specific: the serum of the patient agglutinated the organism obtained from his blood (1:320 serum dilution) and did not agglutinate other gram-negative bacilli, such as Brucella abortus, Brucella melitensis, Bacterium tularense or strains of the typhoid or dysentery groups; antiserums of these bacteria and serums from normal persons did not agglutinate the actinobacillus.

From the Municipal College of Chicago and the Department of Bacteriology of the Michael Reese Hospital. The bacteriologic study was aided by a grant from the Albert Kuppenheimer Fund.

At the suggestion of the editor, this abstract was prepared from our original paper in order to avoid repetition of portions of the previous article, and at the same time to bring out the response to therapy, and the confirmation of bacteriologic study.

[1] Ravaut and Pinoy: Actinobacillose à forme meningée *observée* à Paris chez un Argentin, Presse méd. **19**: 49 (Jan. 21) 1911.

[2] Lignières, J., and Spitz, G.: Actinobacillose, Rev. Soc. *méd.* argent. **10**, 1902.

The laboratory animals (guinea-pigs and rabbits) injected with the actinobacillus, whether by the intravenous, intraperitoneal or subcutaneous route, all survived. One rabbit appeared ill for a day or two but completely recovered.

COMMENT AND CONCLUSION

In the only other report of human infection with the actinobacillus, by Ravaut and Pinoy in 1909, the therapy used was not applicable to our case. This was a case of meningitis following grip, otitis media and mastoiditis. The only therapy used was lumbar puncture, and after two punctures the patient's condition improved. Other than information concerning a recurrent otitis media, further facts are not known.

Since bovine infections are successfully treated with potassium iodide, this would seem the logical therapy to use in human infections. Our patient was given potassium iodide for a period of five weeks and showed no improvement; in fact, he states that he had nausea in addition to his original symptoms. When arsenical therapy was instituted, however, the patient rapidly improved; the symptoms subsided and the patient gained 30 pounds (13.6 Kg.). In consideration of the facts that the patient is free from symptoms, has had two successive negative blood cultures and has regained and maintained his former weight, we believe that the patient is cured.

DERMATITIS VENENATA DUE TO DEERSKIN GLOVES

Howard J. Parkhurst, M.D., Toledo, Ohio

This case is interesting because of its unusual etiology, and also because it was at first mistaken for an industrial dermatosis.

P. S. N., a plumber, aged 50, first consulted me, Oct. 27, 1931, with an ill defined brownish erythematous scaling eczematoid eruption on the hands and wrists, less pronounced on the palms. The eruption was of six weeks' duration and was thought to have been caused by contact with some occupational irritant. It subsided in three weeks with the use of a mild protective antipruritic ointment and fractional doses of roentgen rays. The continued use of zinc oxide ointment as a protective measure was advised.

April 2, 1932, the patient reappeared with an acute erythematous vesicular eruption on the hands, which was said to have appeared within four hours after he had worn deerskin gloves, which he had not put on since October, 1931, the date of the first outbreak. During the interval there had been no eruption.

A patch test with a moistened piece of tanned, undyed deerskin, 1.5 cm. square, was made on the flexor surface of the left forearm, and this test was strongly positive within twenty-four hours, while two similar control tests with other leathers remained negative. The deerskin patch, applied similarly to two other persons for forty-eight hours, did not cause a visible reaction. It could not be ascertained what substances had been used in tanning the deerskin.

The patient stated that he had never touched deerskin before. He had eaten venison once or twice, with no apparent ill results, but had never killed or dressed a deer.

The gloves were discarded, soothing applications were prescribed, and the dermatitis rapidly subsided.

It is apparent that this dermatitis was not of occupational origin and that it was caused by contact with deerskin or substances used in its tanning. The leather had not been dyed. Other leathers had never caused noticeable irritation.

In a brief survey of the literature, no other case of deerskin dermatitis could be found. Recently, however, George M. Lewis [1] has reported two cases of dermatitis venenata of the feet and ankles in which patch tests revealed sensitization to shoe leather or perhaps to substances with which it had been treated. Lewis refers to a similar case, reported in the German literature by Bloch, in which sensitization to shoe leather was demonstrated. Since this report was submitted for publication, Anderson and Ayres [2] have reported a case of dermatitis venenata due to shoe leather. The possibility of confusing this with an eruption due to dermatophytosis is emphasized, and in my case its differentiation from industrial dermatoses is also important.

316 Michigan Street.

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[1] Lewis, G. M.: Dermatitis Venenata Due to Shoe Leather, Arch. Dermat. & Syph. 24: 597 (Oct.) 1931.

[2] Anderson, N. P., and Ayres, Samuel, Jr.: Dermatitis Venenata Due to Shoe Leather, J. A. M. A. 99: 25 (July 2) 1932.

Special Article

VITAMIN D

RUTH COWAN CLOUSE, S.M.
CHICAGO

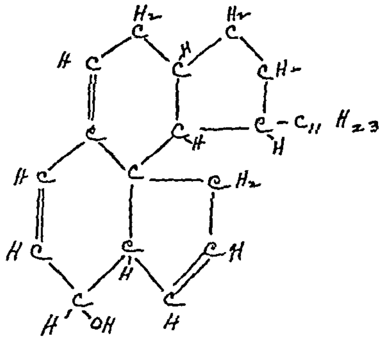
(Concluded from page 222)

[Editorial Note.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

THE CHEMISTRY OF VITAMIN D

All efforts to prepare vitamin D in a pure state and to determine its composition, structure and chemical properties have so far met with failure. Nevertheless, a considerable amount of information concerning the nature of the vitamin has been obtained and it is possible that it may be isolated in a pure form some time in the near future.

Four groups of investigators, one in the United States, one in England, one in Germany and one in Holland, are actively engaged in the study of this problem. The American group is composed of Bills and his associates of Mead Johnson & Co.; the English group of Bourdillon, Webster and others at the National Institute for Medical Research; the German group of Windaus and his associates at the University of Göttingen, supported by the I. G. Farbenindustrie and by E. Merck, commercial manufacturers of Vigantol; and the Dutch group of Reerink and van Wijk and their associates, who are carrying on a cooperative research supported by the Pharmacotherapeutic Institute of the University of Leyden and the N. V. Philip Gloeilampenfabriken of Endhoven, Holland.



Structural formula for ergosterol (Windaus).

The Chemistry of Ergosterol.—The problem of the chemical nature of vitamin D has been attacked through the study of the chemical changes that take place when ergosterol is irradiated. Before discussing these changes, a brief summary of the chief chemical and physical properties of ergosterol itself will be helpful.

In its pure form, ergosterol is a white crystalline solid, melting at from 166 to 183 C., the exact melting point depending on the degree of hydration. It is sparingly soluble in alcohol and other organic solvents, and is readily crystallized therefrom.

According to Tanret, who first discovered this sterol, it has the molecular formula $C_{27}H_{42}O$. According to Windaus, it probably has the structure given on the preceding page. As the formula indicates, it is a highly unsaturated compound, sensitive to oxidation even by the oxygen of the air, and capable of forming esters with acids, both organic and inorganic.

Optical Rotation: A pure preparation is strongly levorotary. When sodium light is used, the specific rotation at 20 C. = —132 ($[\alpha]_D^{20}$ = —132). When mercury is used, the specific rotation = —171 ($[\alpha]_{5461}^{20}$ = —171).

Absorption of Ultraviolet Rays: Many chemical compounds have the power of absorbing light rays of definite wavelengths. The "absorption spectrum" of each individual compound is as characteristic of it as any other of its physical properties and therefore may be used as a very delicate means of identification. Ergosterol exhibits a strong absorption in the ultraviolet, with well defined maxima at 260, 270, 282 and 293.5 millimicrons.

Isomerism: Many isomers of ergosterol exist, some of which, according to Bills, occur naturally and some of which may be prepared only in the laboratory, by the action of acids. Of those which are artificially prepared, some are activatable and some are not. Also, some are mutually transformable with others, and some are not.

The iso-ergosterols prepared by the action of acid catalysts are exceedingly difficult of separation and no one of them has yet been prepared in pure form. A sufficiently clear separation has been made, however, to establish the following points: In physical properties the iso-ergosterols differ from one another chiefly in specific rotation, very little in melting point or crystal form. The absorption spectrums of those prepared by Bills were strikingly similar, exhibiting a maximum absorption at 248 millimicrons. In fact, he writes, "Iso-ergosterol may be spoken of loosely as a substance characterized by this band."

Changes Taking Place on Irradiation: When ergosterol is irradiated with ultraviolet rays, a number of important changes in its physical and chemical properties occur.

First, the crude irradiation product has a much lower melting point and a much greater solubility in alcohol and other organic solvents than does ergosterol itself. It no longer forms an insoluble compound with digitonin, and the optical rotation changes from strongly levorotary to weakly levorotary or even weakly dextrorotary.

At the same time the absorption spectrum undergoes a marked transformation. An initial increase in intensity at 270 and 280 millimicrons is followed by a gradual decrease at all wavelengths longer than 250 millimicrons. Coincident with the final disappearance of all absorption bands characteristic of the original unirradiated ergosterol, a new band, variously located by different investigators at 240, 245 and 248 millimicrons, appears. This band, it will be remembered, is also characteristic of the iso-ergosterols. Its appearance is marked by the disappearance of all antirachitic potency.

Many attempts have been made to identify vitamin D with one or another of the absorption spectrums that appear during irradiation. Indeed, Bills has recently remarked that "nearly every investigator of activated ergosterol has attributed to vitamin D the absorption maxima of the preparation he investigated." But one by one the various theories proposed have had to be abandoned. The majority of investigators now believe that in all probability a number of products—Windaus says at least five or six—are formed by the action of ultraviolet rays on ergosterol. Among these is vitamin D, which very possibly exists in more than one form, one of which may absorb in the region of 265 to 270 millimicrons and another of which may not absorb at all (table 4).

Evidence for the view that some forms of vitamin D do not absorb ultraviolet rays is furnished by the very careful parallel biologic and spectrographic studies performed by Bills, Honeywell and Cox in 1928. In these experiments, the development and decline of potency in the irradiation products was very accurately followed. Observations of the absorption spectrums of each of the products tested biologically showed that no significant changes occurred until after the potency had begun to decline. Then the band at 260 millimicrons began to shift and make way for the new band at 248 millimicrons. When this band appeared, the antirachitic potency was almost entirely gone. These data would indicate that the new absorption bands are due to degradation products and not to the vitamin itself.

Table 4.—*Physical Constants and Antirachitic Potency of Concentrated Vitamin D Preparations*

Investigator	Shape of Crystal	Melting Point, C.	Specific Rotation	Absorption Maxima, Millimicrons	Antirachitic Potency, Minimum Daily Dose γ*
Angus, Askew et al. (Calciferol)	Needles	123-125	$[\alpha]_{5461}^{20°} = +260$ in alcohol	270	0.05
Windaus	Needles	122-123	$[\alpha]_{5461}^{18°} = +169$ in acetone	265-270	0.03
Reerink and van Wijk	Not reported	115-117	$[\alpha]_D = +100$ in ether	Not constant	Not reported
Jendrassik and Kemenyffi	Needles	38	Not reported	No absorption	0.01
Bills	Resin	....	$[\alpha]_{5461}^{20°} = +12$	270	0.07

* 1 γ equals 0.001 mg.

Further support for the view that the vitamin does not absorb is furnished by the fact that two Hungarian investigators, Jendrassik and Kemenyffi, of the National Hungarian Hygienic Institute at Budapest, have reported the preparation of a highly active crystalline product which has no appreciable absorption in the ultraviolet. Also Bills and his associates have found that an active resin prepared from irradiated ergosterol and kept in air for a total of forty-five days showed a gradual decrease in absorption but no appreciable change in antirachitic potency. When this resin was heated at the end of the forty-five day period, the absorption bands entirely disappeared but the product retained approximately half of its original potency.

Crystalline Vitamin D Preparations.—As early as 1923, Dubin and Funk succeeded in obtaining a very small quantity of yellowish brown needle-like crystals from an extract of cod liver oil. Much more recently, four different groups of investigators have isolated from irradiated ergosterol a highly purified crystalline substance of marked antirachitic potency. Although prepared by different methods, these products are all much alike but by no means identical.

Some of the more important data concerning these crystalline preparations have been brought together in table 4. Figures for a highly active resin prepared in the Mead Johnson laboratories are also given for purposes of comparison.

It will be noted that the antirachitic potency of the various preparations is in general about twice that of the English standard solution of irradiated ergosterol. The fact that they differ markedly in physical properties such as melting point and specific rotation may mean either that the crystals are not pure or that the vitamin may occur in slightly different forms.

So far the various preparations have resisted further attempts at purification. The English investigators especially are inclined to believe that their product, which they have called "Calciferol" because of its calcifying properties, is a pure substance which represents at least one form of the vitamin. Since crude irradiation products of much higher potency have been prepared and since the mother liquors from which the crystals are deposited are still potent, one must conclude either that the separation of the vitamin has not been complete or that more than one form of the vitamin exists.

It is entirely possible that none of these preparations represents any form of the vitamin in a pure state. But even if this should prove to be the case, their preparation marks a great advance toward the isolation of vitamin D.

Molecular Structure of Vitamin D.—The crude products of irradiation, freed from ergosterol by precipitation with digitonin, have the same molecular weight and give evidence of the same degree of unsaturation as ergosterol itself. When burned in the calorimeter they give off, gram for gram, the same amount of heat. Irradiation has evidently not caused any change in the number of carbon and hydrogen atoms, or in the number of double bonds contained in the molecule. The hydroxyl group also apparently remains intact, since the irradiation products are capable of forming esters with organic acids. The esters do not have any antirachitic potency, but the active substance may be recovered by hydrolysis.

The molecular structure of vitamin D must therefore be very similar to that of ergosterol. Probably, vitamin D is a simple isomer of ergosterol, formed by a rearrangement of the atoms in the molecule, the details of which are not as yet understood.

STABILITY

In Cod Liver Oil.—The question of the stability of vitamin D is of real significance to the purchaser of cod liver oil because a considerable time must necessarily elapse before this product reaches the retail market. According to Poulsson, the number of fish that come to the shores of Norway each year for spawning is not constant but on the contrary varies greatly from year to year. In seasons when the fish are abundant, the quantity of oil manufactured may be in excess of the demand and some of it may have to be held over until the next season before it is sold. Thus it may easily happen that the oil given to a baby is at least two years old.

Fortunately, however, the antirachitic vitamin in cod liver oil appears to be remarkably stable. It can be distinguished from vitamin A because it resists long periods of oxidation at moderately high temperatures (100 C.). Its chemical nature can be studied because it would also resist the heating with alkali which is necessary for the saponification of the fat. Recently Poulsson has found that it will survive long periods of storage, since two samples which had been kept in a cold place protected from light for twenty-six years had a vitamin content apparently identical with that of fresh Norwegian oil.

In Irradiated Ergosterol.—The antirachitic potency of irradiated ergosterol dissolved in oil seems to be just as stable as that of cod liver oil. There has been, of course, no opportunity to examine any twenty-six year old samples, but those which have been kept for a year or more have not suffered any loss of potency.

Even the dry irradiation products will withstand storage either in vacuo or in air for several months without appreciable destruction of the vitamin. High temperatures of 180 C. or higher, or a combination of oxygen with high temperatures, will, however, destroy it.

TOXICITY OF VITAMIN D

One of the earliest investigations designed to demonstrate the effects of large doses of vitamin D was that of Kreitmar and Moll of the research laboratories of E. Merck and Company in Germany. In the course of this investigation it developed that exceedingly large doses, from 10,000 to 100,000 times the minimum protective dose, caused a rapid loss of weight, followed by death within a short time, not only in white mice and rats but also in guinea-pigs, rabbits, cats and dogs. All these animals presented the same picture of definite and severe disease—loss of appetite, rapid loss of weight, severe emaciation and decided decrease in vigor. Often a diarrhea developed, and the hair became rough and shaggy, and took on a greasy appearance. Death followed in varying lengths of time for different animals, from an average of ten days for the rabbit to thirty-six days for the guinea-pig.

After death, enormous deposits of calcium were found in the walls of the blood vessels and of the vital organs, evidence that calcification had been stimulated to the point at which the mineral was deposited in any and all tissues which would receive it, whether or not it was needed or even useful there.

Further work by other investigators has shown that very often the blood calcium or phosphorus or both are raised much above normal levels. The excretion of calcium and phosphorus shifts from feces to urine, and the mineral balance, which is at first increased, may later be greatly decreased or may become strongly negative, indicating a loss of calcium and phosphorus from the body as a whole. In advanced stages of intoxication the mineral content of the bones may be considerably below that of normal animals.

A few investigators, notably Hoyle and his associates in England, have had difficulty in reproducing this train of symptoms and at one time questioned the toxicity of vitamin D preparations. These early difficulties have now been traced to the type of diet used, the important factor being the quantity of calcium and phosphorus which it contained.

Influence of the Calcium and Phosphorus Content of the Diet.—One of the first observations of the effect of the calcium content of the diet on the toxicity of vitamin D preparations was that of Bills and Wirick, who noted that the addition of 3 per cent calcium carbonate to their normal stock ration greatly increased the toxic effects of a given dose of irradiated ergosterol. Similar observations have been made by Harris and

Innes, who used the Steenbock rickets-producing diet 2965. When the calcium content of the diet was reduced to that contained in the corn and wheat gluten alone (practically 0 per cent), almost no ill effects were observed even with such enormous doses as 10 mg. of irradiated ergosterol (100,000 times the minimum antirachitic dose) daily for each rat. When varying quantities of calcium and phosphorus were added to the diet, each increase in mineral content resulted in an increased severity of the symptoms.

Varying the calcium-phosphorus ratio also affected the results, the most marked symptoms being observed on the high calcium-low phosphorus diets. Harris and Innes estimate that at least eight times as much irradiated ergosterol is needed to produce loss in weight at an equal rate on a high phosphorus-calcium free diet as on a normal calcium diet.

Abnormal calcification of the tissues occurred only on the high calcium diets. On diets low or entirely lacking in calcium the animals lost weight rapidly and died within a short time, but no calcification of the tissues occurred. The bones, however, became soft and fragile, and presented the appearance of severe rickets except that in addition the subepiphyseal spongiosa also had disappeared.

These results may be interpreted as throwing considerable light on the mode of action of vitamin D. As Harris and Innes see them, the functions of vitamin D are to facilitate the absorption of calcium and phosphorus from the intestine and to maintain the level of calcium and phosphorus in the blood. On high calcium diets, huge quantities of calcium may be absorbed, enough to raise the blood calcium far above normal levels. The kidneys dispose of a certain amount of the excess by increased excretion of calcium in the urine, but it cannot all be taken care of in this way, and the calcium is therefore deposited in any of the soft tissues of the body which will receive it.

If the calcium of the diet is low but vitamin D is high, the calcium level of the blood must be maintained. Since the calcium cannot come from the intestinal tract it must be taken from the bone, from the trabeculae first, and later, if this supply is not sufficient, from the shaft also.

The Margin of Safety.—Because of differences in the potency of the products used, it is difficult to make any exact statement concerning the size of dose necessary to produce toxic effects. In short time experiments, however, disastrous results are not apparent on normal diets until the dose administered reaches at least from 25,000 to 50,000 times the minimum antirachitic dose.

In experiments continued for three or four generations, harmful effects which may not be apparent in the first generation may appear in the third or fourth. For example, Light, Miller and Frey of the Fleischmann Laboratories have found that in rats fed the Steenbock diet 2965, doses of 40 units daily, continued throughout three or four generations, have no effect on the mineral metabolism. No pathologic calcification of the tissues occurred, and the ash of the bones was normal. The fourth generation of these rats, however, was much more sensitive to overdosage (6,000 units daily) than were young, normal rats whose ancestors had never received any excessive amounts of vitamin D.

The harmful effects of considerably larger doses of 2,500 units daily were just noticeable in the first generation but were marked in the fourth. The fourth generation rats were very lame in the hind legs, apparently because of spontaneous fractures of the tibia, and the long bones were very low in ash. The head of the long bone was hypercalcified, but the shaft was so soft that it could be bent with the fingers.

Evidently disastrous results are produced in the first generation only when enormous doses are fed. Smaller doses, just on the verge of toxicity in the first generation, may produce a cumulative effect in the third or fourth. The fact should be emphasized, however, that even these doses are several thousand times the minimum dose required to prevent or cure rickets.

THEORIES CONCERNING THE CAUSE OF TOXICITY

Thus far in this discussion it has been assumed that the toxic symptoms produced by enormous doses of irradiated ergosterol are caused by excessive amounts of vitamin D. Opinion on this point is, however, divided, and certain investigators, notably Windaus and his associates at the University of Göttingen, believe that the toxic effects may be produced not by vitamin D but by other substances produced simultaneously with it by the action of ultraviolet rays. Their reasons for this belief will be discussed in the following paragraphs.

Relation of Antirachitic Potency to Toxicity.—In general, the toxicity of irradiated ergosterol preparations runs parallel with their antirachitic potency, the most potent products being at the same time the most toxic. Generally speaking, too, the same influences that destroy antirachitic potency will also destroy the toxicity.

However, Windaus and his associates find that certain influences, particularly high temperature and hydrogenation, may destroy the antirachitic action but leave the toxicity unaltered, and that antirachitic potency and toxicity are not destroyed at the same rate by overirradiation, oxidation or heating.

But although it is possible to prepare a product which is toxic but not antirachitic, by destroying the antirachitic potency after it has been developed, it has never been possible to do the opposite; that is, prepare a product which is antirachitic but not toxic. This leads Windaus to suggest that while it is possible that there are two separate factors, it is also possible that the two effects arise from the same substance, which is capable of alteration so as to lose its antirachitic action without losing its toxicity.

Influence of the Medium in Which Ergosterol is Irradiated.—Harris and Moore have found that excessive doses of irradiated ergosterol exhibit toxic properties whether they have been irradiated dry, in an atmosphere of nitrogen, in solution in alcohol, or dissolved in oil. Bills and Wirick also state that there is "no great difference in the toxicity of ergosterol irradiated in oil, in ether under a reflux, or as crystals in air, provided the antirachitic potency of the preparations is the same."

Hoyle, however, believes that the toxicity is more readily developed when ergosterol is irradiated in alcohol than when irradiated in other solvents, for example, in oil. Support for this opinion is furnished by a recent study reported by Kern, Montgomery and Still. In this study the effects of large doses of ergosterol irradiated dry, in solution in alcohol, and in ether were compared. When sufficiently large doses (from 25,000 to 100,000 times the minimum curative dose) of any of these preparations were given, marked differences in the calcium and phosphorus balance, and in the paths of calcium and phosphorus excretion, were observed. Although the antirachitic potency of the ergosterol irradiated in alcohol was only half that of the other two preparations, the shift in calcium and phosphorus excretion was much more marked when this preparation was fed. This is interpreted to mean that a "profound disturbance in calcium metabolism" had taken place and that ergosterol irradiated in alcohol is more toxic than that irradiated dry or in ether.

No other signs of greater toxicity were observed, however, and the authors take pains to state that they believe that the method of irradiation is not the only or even the main factor involved.

Toxicity of Crystalline Vitamin D Preparations.—Further argument for the theory that excessive amounts of vitamin D are in themselves toxic is the fact that the crystals of "Calciferol," prepared by the British group of investigators, are as toxic as the original irradiation product from which they were derived.

Toxicity of Cod Liver Oil.—It is also true that very large doses of cod liver oil or of its concentrates will produce some of the results obtained with irradiated ergosterol. For example, Collaza, Varela and Rubino report that daily doses of cod liver oil administered to rats on a rickets-producing diet cause failure of growth, hypercalcification of the epiphyses of the long bones, and the deposition of calcium in the walls of the arteries, stomach and heart. Hess, too, reports that excessive amounts of the oil may lead to a loss of inorganic salts from the skeleton and that the blood calcium of young rats may be raised to abnormally high levels by from thirty to forty times the minimum protective dose. "The reason hypercalcemia rarely develops in infants as a result of cod liver oil medication," he writes, "is simply that one cannot give more than about from six to eight teaspoonfuls daily."

Summary.—At present it must be said that the case for the existence of a separate toxic factor, distinct from vitamin D, has not been proved. That there is strong evidence for such a factor cannot, however, be denied, and the results of future work must be awaited to settle the point.

DISTRIBUTION OF VITAMIN D

Cod Liver Oil.—Although other fish oils have proved to be as rich in vitamin D as cod liver oil, or even richer, the latter still remains the most important natural source of the vitamin.

Most of the cod liver oil used for medicinal purposes today comes either from Norway or from Newfoundland. There is a general impression that the oil from Norway is the superior oil, but as a matter of fact there is now little difference between them.

Today the direct steam process is used almost exclusively in the manufacture of medicinal oil. The livers from fresh cod are washed and steamed for about twenty minutes, until the liver tissue has softened and the oil is freed. The crude oil is skimmed off and placed in tanks to allow the water to settle, then chilled to remove fats of high melting point which might solidify during storage, and finally filtered and bottled as medicinal cod liver oil.

A high grade of medicinal oil is light yellow and does not have any objectionable taste or odor aside from a slight fishy smell when the oil is held in the mouth. If exposed to light and air, however, it quickly becomes rancid, and a disagreeable taste and odor develop. Its vitamin content is also diminished, particularly its content of vitamin A.

Variations in Potency.—Cod liver oil is not in any sense a uniform product. Different samples may vary considerably in such chemical and physical "constants" as specific gravity, iodine number and saponification number. It is not surprising to find, therefore, that its vitamin content also is a variable quantity. Hess, Bills and Honeywell have found that oils from individual cod fish may vary as much as a thousand times in potency, the differences being due chiefly to the size and amount of oil in the liver. Small, lean livers yield oils of very high antirachitic potency, while large, fat livers give oils which are much less active.

The commercial product, however, represents a mixture of oils obtained from vast numbers of livers. Different samples may vary somewhat in potency, but according to Bills the variation is less than might be expected or than is commonly supposed. "One seldom finds," he writes, "a pure specimen which is more than twice or less than half as potent as the average." Both Bills and Drummond report that there is no difference in the average potency of Norwegian and of Newfoundland oils.

At present the purchaser has no means of knowing whether a given sample of oil is above or below average potency. But if one is careful to buy only tested oils sold by reputable drug houses one may be sure of a certain minimum potency which, in the doses recommended by most physicians, is sufficient to protect the average baby from rickets.

Vitamins A and D in Cod Liver Oil.—The two fat-soluble vitamins, A and D, although closely associated in cod liver oil, are not parallel. Some oils that are relatively rich in A are poor in D, and others rich in D are poor in A.

The relative concentrations of the two vitamins are not so far apart, however, as the labels on the bottles might sometimes lead one to think. The greatest confusion occurs when both vitamin A and vitamin D potency is expressed in units, and is due to the fact that the vitamin A unit is based on the minimum daily dose, while the vitamin D unit (Steenbock) is based on the total dose. It has been suggested that one or the other unit should be changed so that both are based either on the minimum daily dose or on the minimum total dose.

Cod Liver Oil Concentrates.—Because the fishy odor of cod liver oil is objectionable to some and also because certain delicate children and adults have difficulty in digesting the fat, cod liver oil concentrates are now being offered commercially as substitutes for the oil itself.

There is little in the literature concerning the efficacy of these preparations, and such reports as have appeared are somewhat conflicting. Steenbock, working with calves, and Dr. Amy Daniels, working with rats, have both observed that the cod liver oil concentrates prepared in their own laboratories were most effective when dissolved in oil. Concerning the commercial preparations, one report states that four generations of rats have been reared satisfactorily on a basal diet in which the cod liver oil concentrate furnished the only source of vitamins A and D; another, that the vitamin A content of the product tested was negligible and that it had no greater calcifying properties, gram for gram, than cod liver oil. The method of administering these two preparations is not described.

The value, then, of these concentrates appears to be doubtful. For best results they probably should be dissolved in oil or at least taken in close connection with a meal that is fairly rich in fat. For children, their use is certainly not to be recommended, since much more effective substitutes are at hand, in the form of irradiated ergosterol or irradiated foods, particularly irradiated milk.

Other Fish Oils.—The liver oils of many fish and marine animals have been tested and found to have marked antirachitic potency, some of them considerably more than cod liver oil itself. Puffer fish liver oil, for example, was found to be fifteen times as potent as average cod liver oil, and certain samples of burbot liver oil proved to be eight times as potent as the sample of cod liver oil with which they were compared.

As everyday foods, the fish body oils are probably more important than the liver oils. Fortunately, these too have been found to be highly active. Tuna fish oil, sardine oil and the oil from Newfoundland herring are equal in potency to cod liver oil. Salmon body oil appears to be from one-third to one-half as potent and Maine herring oil about one-seventh as potent as cod liver oil. Shrimps and oysters, although they have not been compared with cod liver oil, have been found to have appreciable amounts of vitamin D.

Whether or not these newly found sources of vitamin D will affect the cod liver oil industry remains to be seen. It is certain, however, that the average American diet would be greatly improved by the addition of larger quantities of these fish foods.

Egg Yolk.—Rat feeding experiments and clinical work with children both have demonstrated that egg yolk is an excellent source of vitamin D. Hess has protected babies from rickets during the winter months by the addition of egg yolk to the milk formula, and other physicians have even been able to cure severe cases of rickets by feeding one or two egg yolks daily.

Variations in Eggs.—Egg yolk, however, is no more a uniform product than is cod liver oil, and the diet of the hens and the amount of ultraviolet radiation which they receive are both important factors in determining its vitamin D content. For example, in one instance it was possible to increase the antirachitic potency of the egg tenfold by the irradiation of the hens, and in another the addition of a small amount of cod liver oil (2 per cent of the ration) resulted in a fivefold increase in potency.

The suggestion has been made that poultrymen and consumers alike should recognize that the conception that "an egg is an egg" is a mistaken one, and that an inadequate ration may yield impoverished eggs as well as impoverished animals. Eggs could well be graded on their vitamin content (judged by the ration and management of the layers) as well as on their appearance, size, freshness, and so forth, and such eggs might be demanded especially by hospitals and for infant feeding.

Stability of Vitamin D in Egg Yolk.—The vitamin D in egg yolk appears to be remarkably stable. Cooking the eggs, even "hard boiling" them, does not destroy their potency, nor does "cold storage" for six months at 40 F. in an electric refrigerator. Even the Chinese method of preserving ducks' eggs did not seem to destroy the antirachitic value of the yolk.

Cow's Milk and Butter.—Butter fat, although a good source of vitamin A, contains relatively little of the antirachitic factor. In an early investigation carried out by Jones, Steenbock and Nelson the samples of butter examined showed only about one two hundred and fiftieth as much antirachitic potency as the particular samples of cod liver oil tested, although the ratio of vitamin A in the two was 1 to 20.

Other samples of spring and summer butter assayed in England by Coward contained only from 0.8 to 1 unit (British Medical Research Council) of vitamin D per gram, as compared with from 50 to 150 units for cod liver oil. Thus the cod liver oil was between 50 and 185 times as potent as the butter tested.

London milk examined by the same investigator in the late fall contained practically no vitamin D, but in the following summer it had a value of 0.2 unit per gram. The summer milk, therefore, contained approximately 50 units per cup, or 200 units per quart, a small but appreciable quantity.

The seasonal differences in the antirachitic potency of milk and butter which have been observed by numerous investigators apparently are due to variations in the cow's ration and not in the amount of sunshine it receives. In a long series of very careful experiments which have been carried out at the University of Wisconsin it has been impossible to observe any increase in antirachitic potency in milk from cows which have been exposed to sunshine or which have received intense irradiation with artificially produced ultraviolet rays. Potency could be markedly increased, however, by the addition of cod liver oil or irradiated yeast to the cow's ration.

Other investigators have confirmed the results with irradiated yeast and have also obtained similar results with irradiated ergosterol. According to these later reports, it is possible to increase the vitamin D content of butter from fourteen to sixteen times by feeding either irradiated yeast or irradiated ergosterol.

Of the three sources of vitamin D in the cow's ration, the choice seems to be irradiated yeast. Cod liver oil is absorbed to a slight extent only by the cow, whose digestive tract is not adapted to handling such large amounts of fat and, for some reason which cannot be explained at present, better results are obtained with smaller quantities of irradiated yeast than with irradiated ergosterol.

The feeding of a standardized irradiated yeast to milking cows may therefore be considered as a practical measure for the production of a milk of standard antirachitic potency.

Effect of Heat on the Antirachitic Potency of Milk.—Sterilization at 15 pounds pressure for thirty minutes, or evaporation under conditions which approximate those used in commercial practice, results in a slight but appreciable reduction in the antirachitic potency of the milk.

This should not be interpreted as an argument against the use of evaporated or other heat treated milks in infant feeding, but it is an indication that special care must be taken to furnish adequate amounts of vitamin D to children fed in this way.

Vegetables.—Vegetable foods, even the green leafy vegetables so rich in vitamin A, are ordinarily lacking in vitamin D. Certain English investigators have been able to demonstrate a slight antirachitic potency in spinach grown outdoors during the summer months, but to all practical purposes, in the planning of human diets, vegetables must be considered to be lacking in antirachitic potency.

Vegetable Fats.—Vegetable fats, like the vegetables themselves, are not antirachitic. Occasional samples of coconut oil have been observed to have potency, probably because they have been made from sun-dried copra. But the lack of vitamin D in the other commonly used vegetable oils, such as cottonseed, corn, olive and peanut, and, indeed, in most samples of coconut oil, has been demonstrated many times by many different investigators.

Oleomargarine.—As is well known, oleomargarines are of two kinds: those made from vegetable fats and those made from animal fats, chiefly beef oleo oil. As regards vitamin D content, a sharp distinction must be made between the two products.

The vegetable margarines are notoriously deficient in both of the fat-soluble vitamins, but the animal margarines may contain appreciable amounts of each. Samples of an animal margarine made from oleo oil and neutral lard, and churned in whole milk in such a way that nearly all the solids of the milk went into the margarine, have recently been tested at the Physiological Laboratory of the University of Chicago. This margarine was found to be equal in vitamin A to a good grade of butter and to have a vitamin D content about half way between that of the samples of butter and cod liver oil with which it was compared.

CEREALS AS ANTICALCIFYING SUBSTANCES

Soon after Mellanby's original announcement of the discovery of the dietary cause of rickets, he made a second startling statement to the effect that cereals, especially oatmeal, not only do not contain vitamin D but do contain some definite anticalcifying substance. Continuing his work on dogs, he found that on a diet which was deficient in vitamin D, when other dietary and environmental factors remained the same, doubling the amount of cereal made the rickets distinctly worse. Moreover, the kind of cereal seemed to influence the results, oatmeal being the most harmful, while equal amounts of maize, barley, rice and whole wheat flour were successively less so. Polished rice and white flour were the least harmful of all, but large quantities of wheat germ substituted for the white flour produced a type of rickets almost as severe as the oatmeal cases.

Steenbock, on the contrary, has been unable to confirm these results. He finds little difference in the severity of the rickets produced in rats by different cereals, and such differences as he does find indicate that corn, not oats, is the most seriously rickets producing.

Mellanby, however, has been able to extract a substance from oatmeal which, when added to a diet that would otherwise produce slight rickets, intensifies the symptoms considerably. He also finds that if the oatmeal is boiled with a 1 per cent solution of hydrochloric acid, the neutralized product is found to have lost its power of interfering with the calcification of the bones.

Recently Mirvish, by methods similar to those used by Mellanby, has obtained from oatmeal an extract which will lower the blood calcium of rabbits 30 per cent in from twenty-four to forty-eight hours after intraperitoneal injection, with a return to normal in approximately seventy-two hours. Since the substance obtained from oatmeal is similar in action to bovine ovarian extract, Mirvish has named it "calcovarin." He believes that the rickets producing and blood calcium reducing reactions are both a function of the same extract, and that one must attribute the development of rickets in cases in which the oatmeal extract is fed to an oversupply of calcovarin.

These discoveries should not be allowed to cast any doubt on the value of cereal in human dietaries, particularly those of children. Mellanby himself was the first to show that the anticalcifying effects of cereals or cereal extracts may be completely nullified by supplementing the diet with adequate amounts of vitamin D in the form of cod liver oil, egg yolk or irradiated fats, or by irradiating the animal, or even the cereal itself. One immediately calls to mind the fact that whole races of people, notably the Highland Scotch and many peoples of the Orient, have lived for generations on diets consisting largely of cereals. The Highland Scotch, particularly, have been a sturdy race, noted for their fine physical development. Their diet has, however, been well calculated to overcome the deficiencies of the cereal, since it has contained an abundance of milk and fish. In tropical countries the sunlight undoubtedly performs the same function.

There is therefore no reason to believe that the relatively inexpensive cereal, if properly supplemented with liberal amounts of vitamin D, may not be used in almost any quantities that are practical or that are desired.

IRRADIATED FOODS

Reference has already been made to the almost simultaneous announcements by Hess and by Steenbock of the successful activation of foods by irradiation with ultraviolet rays. Further work by these investigators and others has shown that many foods may be made powerful antirachitic agents by this means.

The foods that have been successfully irradiated include a long list: numerous oils and fats—olive, cottonseed, linseed, corn and coconut oils, lard, oleomargarine and butter; cereal products—refined wheat flour, whole wheat flour, shredded wheat, cream of wheat, oatmeal and even cornstarch; meat; milk, whole or dry; various vegetables, yeast, orange juice, chocolate and ice cream. The potency of egg yolk has been increased from ten to twenty times and that of butter fat from fourteen to twenty times by irradiation. Sugar is almost the only natural food for which attempted irradiation has been unsuccessful. Liquid petrolatum cannot be activated and neither can rancid oils or fats, apparently because the activatable substance is destroyed during the development of rancidity.

Commercial Irradiation of Food: The Steenbock Patent.—Fearing the commercial exploitation of a procedure endowed with such great possibilities for harm, Steenbock, in 1924, patented the process of the irradiation of foods and medicinals by ultraviolet rays. The patent has, however, been assigned to an organization formed for the purpose of receiving it, the Wisconsin Alumni Research Foundation. The foundation sells licenses to manufacturers desiring to use the process, and controls their procedure and even their advertising. Profits from the licenses go to the foundation, not to Steenbock himself. Rights to manufacture under the patent have been sold to the Quaker Oats Company, the Fleischmann Yeast Company, the Dry Milk Company, the Sawyer Biscuit Company and also to other companies in the United States, England and Germany.

Commercial Methods of Irradiation.—The process is usually carried out by exposing the material in a thin layer on a moving belt which passes under a battery of mercury vapor quartz or carbon arc lamps. Solid material may be allowed to fall once or twice to lower belts to secure a partial turning over of the particles, and liquids, instead of passing over a belt below the light, may be allowed to fall in a thin film around or in front of an ultraviolet generator.

Long exposures, of one hour or more, may develop disagreeable tastes and odors in the food and may also result in an appreciable reduction in the content of other vitamins, especially vitamins A and C. Maximum potency can, however, be developed in very short exposures, with no effect whatever on the flavor or the appearance of the food. Supplee and his associates in the Research Laboratories of the Dry Milk Company report that the length of time required for maximum activation of milk powder depends to some extent on the fat content of the milk but that even skim milk reached its maximum potency in forty-eight seconds. Dry milk samples containing more than 5 per cent of butter fat attained a high degree of potency after irradiation for sixteen seconds.

Short periods of irradiation are equally effective for cereals. In a recent article, Steenbock writes "We have found an exposure of a fraction of a second with a battery of quartz mercury vapor lamps entirely satisfactory."

For butter, longer periods seem to be necessary. Steenbock and Wirick report that the most favorable conditions for the development of antirachitic potency are thirty minutes' exposure at a depth of 0.16 cm. The *greater part of the antirachitic* potency is developed in the first ten minutes, however.

Fortunately the irradiation of foods need not greatly increase their cost. The Quaker Oats Company is selling irradiated cereals at no advance in retail price, and Dorcas of the National Carbon Company in Cleveland writes that the cost of the irradiation of any food "may be expressed by cents, rather than dollars, per ton of food treated."

Stability of Antirachitic Potency.—Antirachitic potency developed in foods by irradiation appears to be a stable property. Steenbock reports that irradiated cereals held at temperatures as high as 60 C. for sixteen months showed no decrease in potency. After from twenty-three to twenty-eight months there was some reduction, but long before this time even unirradiated cereals kept under the same conditions had developed a strong odor and taste and were entirely unfit for human consumption.

Irradiated dried milk kept for six months in a cupboard under ordinary conditions lost but little of its potency, and even after a year it had deteriorated only moderately. Irradiated butter fat retained most of its potency during storage for seven months in a refrigerator.

Ordinary processes of cooking also do not have any effect on the potency of irradiated cereals, although the vitamin may be destroyed by commercial baking if the temperature is allowed to go too high.

Irradiated Milk.—For the irradiation of milk, perhaps even more than for other foods, especial care must be taken to prevent the development of disagreeable tastes and odors. But if the conditions of the irradiation are properly controlled, a highly satisfactory product may be prepared.

If the irradiation is carried out for but a few seconds, not only is there no change in flavor but the other vitamins of the milk are unaffected. Supplee and Dow report a slight destruction of the antiscorbutic vitamin in milk irradiated in liquid form, but, they write, "Comparatively considered, it is probable that the degree of destruction of vitamin C . . . does not reduce the level of this factor below that frequently found in *nonirradiated, natural fluid milk.*" Dry milk irradiated by ultraviolet rays for periods as long as twenty minutes did not show any evidence of the destruction of vitamin C due to such irradiation.

Irradiated Butter.—Since butter, especially winter butter, is relatively poor in vitamin D, practical methods for increasing its potency are under consideration. Either of two methods might be used; namely, irradiation with ultraviolet rays or the addition of small amounts of irradiated ergosterol.

If butter is irradiated, the question of the effect of the ultraviolet rays on its vitamin A content becomes important. In this connection, Steenbock has found that, under conditions designed to develop maximum antirachitic potency, some vitamin A is destroyed. But since maximum activation probably is not altogether desirable, he believes that any material destruction of vitamin A in the commercial product need not be feared.

Irradiated Cereals, Bread and Vegetables.—A number of irradiated cereals manufactured under the Steenbock patent are now on the market. These cereals, as they are marketed, are not highly potent, certainly not potent enough, in the amounts usually eaten by the average child, to prevent or cure rickets. Their activity is, indeed, standardized to that degree of potency which will allow normal bone production when the irradiated cereal is fed as the sole source of cereal in the Steenbock diet 2965 (76 per cent of the diet) but not when diluted with three parts of undiluted cereal. "This keeps the cereal definitely in the food class and does not make it a medicine."

The value of such weak activation might be questioned by many, but, in the words of Tisdall and Brown, "the chief value of irradiated cereals is that irradiation changes them from rickets-producing foods to rickets-preventing foods. As three teaspoonfuls of cod liver oil each day during the winter months does not furnish any great excess of vitamin D over the amount necessary to prevent rickets in the average infant or young child, any means that can remove the rickets-producing tendency of cereals is of value." Cereal should not be taken in such quantity as to replace important and essential foods.

In the case of bread and vegetables the extent of the irradiation in terms of value in comparison to cod liver oil is indicated on the labels.

The Advisability of the General Use of Irradiated Foods.—The wisdom of the general use of irradiated foods is discussed by Steenbock as follows.

> Essentially, the advisability of the fortification of foods with vitamin D is primarily a problem of: first, what is the extent of the deficiency of the human diet in vitamin D; and, second, to what extent is it absolutely essential that this deficiency be corrected? . . . It must be admitted that there are many circumstances in connection with vitamin D requirements which need to be investigated. For instance, one can well raise the questions: Is there a possibility of hypervitaminosis resulting in the adult through the consumption of such an amount of vitamin D as is necessary for normal bone building in the child? Is the health of the nonlactating person endangered by taking as much vitamin D as is necessary for the nursing mother? May there not be some danger in insuring, by additional vitamin D intake, uninterrupted normal bone building during the entire period of an individual's growth? And it must always be recognized *that the optimal vitamin D* intake is conditioned by the calcium content of the diet. Excessive calcium intake makes vitamin D more harmful. It is, however, certain that during man's phylogeny under different dietary and climatic environments, with particular reference to exposure of body and food to sunlight, he has exceeded his required vitamin D intake not only by large amounts but over extended periods of time. On this basis, if on no other, it is to be expected that a considerable degree of tolerance should

have been developed. This point of view is supported by our animal experimentation.

As opposed to those who may be skeptical about the value of the general use of irradiated foods on the basis of danger of hypervitaminosis, there may also be those who will believe that little, if anything, is to be gained by the use of these foods because of their low degree of potency. It is difficult to answer this criticism except by calling to their attention the fact that it is preferable to be absolutely safe by avoiding an excessive intake and that any treatment which has as its result the unquestioned improvement of a food, even though this improvement is of a small degree, is one that is not only justifiable but should be instituted in the interest of public health whenever circumstances permit.

Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

MORNING BRAND MILK

(Unsweetened, Evaporated)

Manufacturer.—Morning Milk Company, Salt Lake City, Utah.

Description.—Canned unsweetened sterilized evaporated milk.

Manufacture.—Essentially the same as described for the usual evaporated milk. (See The Journal, Jan. 23, 1932, p. 319.)

Analysis (submitted by manufacturer).—

	per cent
Moisture	73.3
Total solids	26.7
Ash	1.5
Fat (Roese Gottleib Method)	7.8
Protein (N × 6.38)	7.4
Lactose (by difference)	10.0

Calories.—1.4 per gram; 40 per ounce.

Claims of Manufacturer.—This brand of evaporated milk is for general cooking, baking and table uses and infant feeding. The mixture of equal parts of the evaporated milk and water is not below the legal standard for whole milk. The curds formed in the stomach are smaller, softer and more readily digestible than those from raw or pasteurized milk.

BARKER'S 100% WHOLE WHEAT BREAD

Manufacturer.—Barker Baking Company, Grand Forks, N. D.

Description.—A whole wheat bread, made by the straight dough method (method described in The Journal, March 13, 1932, p. 889), prepared from whole wheat flour, water, salt, shortening, sucrose and yeast.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	37.5
Ash	2.0
Fat	2.2
Protein (N × 6.25)	9.7
Crude fiber	1.3
Carbohydrates other than crude fiber (by difference)	47.3

Calories.—2.5 per gram; 71 per ounce.

Claims of Manufacturer.—A bread of good quality.

UNION BRAND GOLDEN TABLE SYRUP

(Corn Syrup and Refiners' Syrup)

Distributor.—Union Sales Corporation, Columbus, Ind.

Description.—A table syrup; corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calories, Claims of Manufacturer.—See these sections for Pennant Golden Table Syrup (The Journal, Jan. 30, 1932, p. 402).

SWANDER'S LONG BOY BREAD

Manufacturer.—Swander Baking Company, General Office, Rapid City, S. D.

Description.—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932, p. 817); prepared from patent flour, water, powdered skim milk, a partially hydrolyzed starch, shortening, salt, yeast, sucrose, malt extract and yeast foods containing, respectively, calcium sulphate, ammonium chloride, sodium chloride and potassium bromate and a mixture of calcium acid phosphate and calcium peroxide.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	31.9
Ash	1.1
Fat	1.5
Protein (N × 6.25)	9.4
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	55.8

Calories.—2.7 per gram; 77 per ounce.

Claims of Manufacturer.—A bread of good quality.

KRE-MEL DESSERT (VANILLIN FLAVOR)

A mixture of sugar (dextrose and sucrose), corn starch, vanillin flavor, with U. S. Certified Food Color added.

Manufacturer.—Corn Products Refining Company, New York.

Description.—Mixture of dextrose, corn starch, sucrose; flavored with vanillin and colored with U. S. Department of Agriculture certified color; packed in wax-paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	0.9
Fat (ether extract)	0.1
Protein (N × 6.25)	0.1
*Dextrose	45.0
*Sucrose	24.0
*Starch	24.5
Crude fiber	0.0
Titratable acidity as HCl	0.02
Vanillin flavor	present

* Estimated from formula.

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—A dessert powder for the simple preparation of table desserts.

SUMMER GIRL BRAND GOLDEN SYRUP

(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—H. D. Lee Mercantile Company, Kansas City, Mo.

Description.—A table syrup; a corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calories, Claims of Manufacturer.—See these sections for Banner Blue Corn Syrup with Cane Flavor (The Journal, March 5, 1932, p. 817).

"220" BREAD AND KEW-BEE REDI-SLICED BREAD

Manufacturer.—Kelley-MacGregor Baking Company, St. Petersburg, Fla.

Description.—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932), prepared from patent flour, water, yeast, salt, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, sucrose, lard, and sweetened condensed skim milk.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.3
Ash	0.7
Fat (ether extraction method)	1.1
Protein (N × 6.25)	8.3
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	55.2

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

DANISH PRIDE EVAPORATED MILK

Manufacturer.—Pet Milk Corporation, St. Louis.

Description.—This is the same product as Pet Unsweetened Evaporated Milk (The Journal, Nov. 15, 1930).

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 23, 1932

THE TECHNIC OF MEASURING BLOOD PRESSURE

The progress of medical diagnosis has been characterized by the introduction of new and more accurate methods of studying bodily functions. Some of these procedures represent applications of chemical reactions, notably in recent years; others are exemplifications of physical measurements. In many instances the innovations have tended to replace subjective impressions of the examiner by objective data. This is conspicuously true, for instance, in the use of the watch for estimating the heart rate and of the clinical thermometer to register body temperature. Information regarding blood pressure, long secured through the *tactus eruditus* of the physician, has been supplemented in modern times by other, likewise indirect, methods of sphygmomanometry. They have become familiar in principle, consisting, as they do, of an estimation of the pressure on a superficial artery required to obliterate the flow of blood in it.

In the physiologic laboratory it has long been customary to employ more direct methods; that is, to connect the interior of an artery with the manometric apparatus, thereby avoiding any error possibly associated with the arterial walls. There are many records of comparison, on animals, between the direct and indirect procedures for estimating the arterial tension. Most of them suggest that the errors involved in the indirect procedures such as clinicians commonly employ on man today are not significant—probably not greater than 10 mm. of mercury in the presence of normal arteries. In the case of sclerosed and therefore less elastic arteries, it has been admitted that sphygmomanometric readings may be misleading. According to one group of investigators:[1] "the commonly accepted criteria for obtaining systolic and diastolic blood pressures do not yield correct results but give readings which are too high. . . . In soft arteries, the error is not large, but in arteries made resistant by disease or by contraction of their muscular elements, it must be very great."

In a recent study on man at the Tufts College Medical School in Boston by Dameshek and Loman,[2] the intra-arterial (brachial) pressure in about 150 individuals was determined by a direct method, which was compared with the usual indirect methods. The direct procedure in these cases involved puncture of the artery with a needle attached to a manometer. The results showed the indirect method of sphygmomanometry to be accurate even in the presence of marked arteriosclerosis. The error introduced cannot at most be more than 10 or 20 mm. of mercury, which is not sufficiently great for practical purposes. According to Dameshek and Loman, the apparent discrepancy between direct and indirect readings in arteriosclerosis is due not to the hardness of the vessel wall and consequent resistance to compression by manometer "cuffs" but rather to the degree of high pulse pressure. In direct intra-arterial measurements it was discovered that the greater the pulse pressure the less accurate was the technic used—in other words, a mean rather than a systolic pressure was determined. Incidentally, it was found that the intrabrachial pressure is in almost all instances definitely higher than the intrafemoral or intracarotid pressures. The femoral arterial pressure is probably somewhat lower than the brachial because of its greater distance from the heart and the consequent slight loss in the head of pressure. The studies included the use of manometers of both the calibrated aneroid and the mercury type.

MOUTH WASHES AND GARGLES

The Council on Dental Therapeutics of the American Dental Association, founded and organized after the manner of the Council on Pharmacy and Chemistry of the American Medical Association, has begun to secure order in the complex and difficult field in which it works. Among the most recent of its publications is a consideration of the subject of mouth washes.[1] Physicians have long since begun to realize that a mouth wash is simply a pleasantly flavored fluid with which to rinse the mouth. There are, of course, highly antiseptic solutions which may be swished around in the mouth for considerable periods of time and, no doubt, by such swishing for a sufficiently long time one may reduce the bacterial count. However, the mouth is easily accessible to an influx of new germs, and the moment the antiseptic is removed such germs as remain continue to multiply and to reproduce. There are, no doubt, hemorrhagic conditions with a tendency to softness and bleeding of the gums and mucous membranes of the mouth in which astringent solutions may be of value for a limited time, when administered under competent advice. For the vast majority of normal people, however, a mouth wash is simply a pleasant tasting fluid for rinsing the mouth. Normal persons do not require antiseptics or astringents for routine application to the oral cavity. Notwithstanding these facts, manufacturers of mouth washes of various types, including acids and alkalis, astringents and nonastringents, of greater or lesser antiseptic value have, by astute advertising campaigns, led great multitudes of people to the routine use of such rinsing solutions and have proved by the quotations of their stocks on the market that "there's milyuns in it."

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[1] Brooks, C., and Luckhardt, A. B.: Am. J. Physiol. **40:** 49 (June) 1932.

[2] Dameshek, William, and Loman, Julius: Direct Intro-Arterial Blood-Pressure Readings in Man, Am. J. Physiol. **101:** 140 (June) 1932.

[1] Mouth Washes: Report of the Council on Dental Therapeutics, J. Am. Dent. A. **19:** 1239 (July) 1932.

The Council on Dental Therapeutics of the American Dental Association says that "the average mouth wash on the market may be stated to be devoid of immediate harm when used merely as a mouth wash." It is recognized that many of the chemical compounds incorporated into mouth washes have a high germicidal value on the basis of the pure chemical and, at the same time, that the dilution to which they are subjected may completely invalidate such germicidal value as the pure compound possesses. Therefore, germicidal tests must be made with the dilution recommended by the manufacturer and on a concentration found in the mouth during use. Although the phenol coefficient method is useful as a relative measure of the potency of various germicides and antiseptics, it is essentially a laboratory test tube method. "No method or combination of methods has been devised," says the dentists' council, "which will give a thoroughly satisfactory comparison of germicidal agents in a test tube and under the conditions in which they are actually used." Tests carried out in the mouth are even more difficult than those concerning areas of the skin. There is no way to estimate even roughly the number of bacteria in the mouth at any given time, or the number remaining after the mouth wash has been used, or the rapidity with which the germs again develop after the mouth wash is used. The presence of remnants of food, the condition of the gums, and many other factors which interfere with the extent to which the mouth wash may reach the germs or remain in contact with them are other factors complicating the situation.

Physicians have known for years that a gargle seldom gets beyond the anterior pillars of the tonsils and certainly does not get at the germs that are in the crypts of the tonsils. The Council on Dental Therapeutics feels that the usual run of mouth washes are not medicines in any sense of the word and really serve no more intrinsic purpose than as an aid in the mouth toilet in the removal of loose food and débris. Furthermore, it has not been shown that the mouth of the average normal person needs a medicated mouth wash.

While the Council on Dental Therapeutics does not specifically attack the claims made for any widely advertised mouth wash, it does point out that the claim that a mouth wash removes mucin films is too remote to warrant serious consideration, which is, of course, a direct thrust at the claims made for such products as Mu-Sol-Dent. It continues with the assertion that the same statement applies to neutralization of mouth acidity; and to halitosis, which is a specific indictment of the advertised claims for such preparations as Listerine and Pepsodent. Before investing considerable sums of money in any of these toilet articles, therefore, the medical profession, the dental profession and the public will do well to realize the limitations of the products so far as concerns their value for the prevention and treatment of disease.

THE INTRACUTANEOUS TUBERCULIN TEST

Koch's use of tuberculin in 1890 was greeted with keen interest on account of its promise in two directions: an effective treatment of tuberculous disease and a new diagnostic method. Neither of these hopes has been fully realized. Since 1890, various tests have been employed for detecting tuberculosis, having as their common basis the allergic response of individuals infected with the tubercle bacillus to the products of its growth. The cutaneous (Pirquet) and the intracutaneous (Mantoux) are the only methods of tuberculin testing widely used. The results of numerous comparative studies seem to indicate that the intracutaneous (Mantoux) test used in doses of 0.1 cc. of 1:1,000 dilution (= 1 mg.) is at least as sensitive as and in larger doses more sensitive than the cutaneous or Pirquet scratch test when the maximum concentration (undiluted) of tuberculin is used for the latter method. The intracutaneous test is thus a thousand or more times as sensitive if concentration is compared with concentration. The objection that it is too delicate cannot be upheld because the sensitiveness of the method may be reduced at will by dilution until equal to or less than the Pirquet test. The greater sensitiveness of the intracutaneous method gives it a reserve of strength not possessed by the Pirquet test. Since undiluted tuberculin is generally used in the first instance for the Pirquet test, repetition with the same solution is the only means of procedure in case of doubt. In the intracutaneous method it is possible to use ten, a hundred, and if necessary a thousand times the usual initial dose when retesting patients.

The two tests differ in other respects besides sensitiveness. In the Pirquet reaction the volume entering the skin is variable and cannot be measured, so that the quantitative use is limited. Even if two tests are made simultaneously, a response may be obtained in one and not in the other. In contrast to the Pirquet test, however applied, the intracutaneous method affords an accurate means of administering a known quantity of tuberculin at a known depth of the skin. It therefore can be used quantitatively in graded doses and the results compared with considerable accuracy. The intracutaneous test is thus more sensitive and more free from technical error than the Pirquet test and the dose can be more accurately regulated.

Qualitative skin tuberculin tests are usually made with the same concentration of tuberculin in each case, and the result of the test is either reported merely as positive or negative or is roughly classed according to the intensity and sometimes the character of the reaction. It seems that a positive reaction to a qualitative test establishes that infection has taken place. Except in early life, further information about the prognosis and diagnosis is likely to be better obtained by using a quantitative procedure. Quantitative skin tuberculin tests are made (*a*) with tuberculin of fixed concentration, the results of the test being classified according to the intensity of the reaction, or (*b*) with a series of graded dilutions, the test being reported as positive or negative to a particular dilution, and these two methods are frequently combined.

The technic of the intracutaneous test is fully described by Hart[1] in a recent publication:

> Human old tuberculin of known potency according to the international standard should be used. Dilutions of 1 : 10,000, 1 : 1,000, 1 : 100 and 1 : 10 are prepared. They should not be used more than a fortnight after dilution. The diluent recommended is a 0.5 per cent phenol-saline solution. The front of the forearm or upper arm is cleansed with alcohol or ether before making the test and an injection of 0.1 cc. of the dilution is made with the bevel of the needle upward. In making the injection the skin should be held taut with the left hand, the needle being inserted at the smallest angle possible until the bevel is just completely covered. In this way subcutaneous injection is avoided. The injection must raise a bleb, on the surface of which the hair follicles should be clearly visible. Control solutions are unnecessary as a routine when solutions of 1 : 100 or weaker dilutions are used but are advisable with 1 : 10 or more concentrated tuberculin in order to prevent confusion with delayed atypical nonspecific reactions, which follow these large doses with comparative frequency. The controls should consist of glycerinated veal peptone broth of the same strength and composition as that contained in the tuberculin and preferably obtained from the actual medium from which the particular sample of old tuberculin was obtained. Readings should be made at forty-eight and ninety-six hours or, if only one observation is possible, at seventy-two hours. The test should be recorded as positive or negative to the given dilution. A reaction should be regarded as positive if it consists of an area of erythema or erythematous infiltration the greatest diameter of which equals or exceeds 5 mm. If a control test is made, an area definitely greater than that on the control arm constitutes a positive reaction. Feeble positive reactions are liable to cause difficulty. Doubt may generally be removed by retesting with ten times the strength of tuberculin. This procedure should be carried out within a week of the previous test or else after an interval of several months, on account of the possibility of sensitization causing a reaction. The initial injection should be 0.1 cc. of 1 : 10,000 tuberculin. When, however, experience and confidence in the test have been gained, the initial dose may be 0.1 cc. of 1 : 1,000 tuberculin except in patients (*a*) suspected of having bone, joint, ophthalmic or skin tuberculosis (*b*) who have had a recent hemoptysis or (*c*) who are home contacts of tuberculosis, and (*d*) in patients when attendance at further tests cannot be guaranteed. The weaker solution is less likely to produce discomfort or severe reactions than is 1 : 1,000 when given as the initial injection. The latter solution, however, gives a clearer reading and saves time. The initial concentration must never be greater than 1 : 1,000. All patients negative to a 1 : 10,000 dilution should be retested with a 1 : 1,000 dilution. A dose of 0.1 cc. of 1 : 1,000 solution of tuberculin is in general sufficient for routine purposes. To make more certain, however, patients negative to this dose should where possible be retested with 0.1 cc. of 1 : 100 tuberculin. This procedure should be carried out if there is the slightest doubt as to the diagnosis from the clinical standpoint or if reduced reactivity is suspected. In such cases, if the patient is still negative, he should be further tested with 1 : 10 dilution. The latter is the practical upper limit because stronger solutions are difficult to inject, cause pain, rarely yield additional positives, and give atypical nonspecific reactions with comparative frequency. Retests are conveniently made at the time of reading the previous reactions.

Although it is some forty years since this method was first introduced, a vast experience has been necessary to permit the development of anything approaching a standard technic and a standard interpretation such as are suggested by Hart. The accumulation of additional records of cases studied by this method will therefore determine whether such a procedure yields results sufficient for practical purposes or whether further research is required for still more certain methods in diagnosis.

Current Comment

TRICHINIASIS FROM "JERKED" BEAR MEAT

Parasitic infestation in man is becoming less and less common in this country. Even in the South, yellow fever, malaria and hookworm disease are succumbing to the efforts at eradication. Entomologists, mycologists, public health workers and physicians have had a part in this continued campaign of "cleaning out." The recent report of Walker[1] is interesting not only because of the increasing rarity of trichiniasis but also on account of the circumstances surrounding the cases. A brown bear was shot by a party of hunters, who preserved the meat by "jerking," a process consisting of smoking thin strips and then drying in the sun. A considerable amount of this "jerky" was eaten by a boy, a member of the hunting party, and a little by four other members of his family. Within ten days to two weeks all became ill with typhoid-like symptoms but in varying degrees dependent, partly, on the amount of "jerky" consumed. All the patients experienced chills and fever early in the course, and high white cell count, with polymorphonuclears emphasized at the height of the disease and eosinophilia during convalescence. In all but one of the patients there were severe muscular pains and greater or less inability to move the extremities. Microscopic examination of the "jerky" showed that the bear muscle was "loaded with Trichinella spiralis in the encysted stage." At necropsy of the boy the unencysted larvae of Trichina were found throughout the diaphragm and pectoral muscles. The life history of this dangerous parasite is well known; two hosts are necessary for the complete cycle. Poorly cooked pork has, in the past, been the commonest source of trichiniasis in man. This account of infected bear meat not only is of scientific interest but serves as a warning to the increasing number of amateurs who spend their vacations roughing it in a romantic but often unhygienic manner.

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[1] Hart, P. D.: Med. Res. Council, Spec. Report Series, no. 164, 1932, p. 136.

[1] Walker, A. T.: Trichiniasis, J. A. M. A. 98: 2051 (June 11) 1932.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

July 25. Harmful Effects of Bran.
July 27. Diabetes.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

July 30. Gastritis.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Food Poisoning.—Eight cases of food poisoning were reported in Plumas County during May, the bulletin of the state department of health noted recently. These cases occurred in a lumber camp and probably had their source in meat which had been allowed to stand on a warm stove and which was served without reheating. Eight cases of gastro-enteritis were reported from Madera County, and of this group four cases of typhoid developed later, the bulletin states. The investigation of this outbreak had not been completed, July 2, and the source had not then been determined definitely.

News of Some Eyesight Swindlers.—Newspaper reports of the activities of eyesight swindlers throughout the state were recently printed by *California and Western Medicine*. Edward Cavenaugh, in jail in Los Angeles, it was stated, was identified by a woman in Antelope Valley as the man who swindled her out of $1,000 through the "eye treatment racket." Pretending to discover an "ailment" in one of her eyes, he recommended a "Dr. Miles," who administered "radium" which subsequently turned out to be "drops of clear water." "Dr. Miles" produced a small particle of substance which he told the patient had been removed by application of "radium." The same group is said to have swindled an Elk Grove rancher out of $3,500 through similar "treatment."——Matthew O. Wilkinson, alleged eyesight swinder, was recently returned by authorities from Texas. He is said to have posed in 1930, as a business man, interceding in behalf of eyesight swindlers Frank Faircloth and John F. Gebhart. On his failure to appear in court at Chula Vista, April 19, cash bail of $200 deposited by his attorney was said to have been declared forfeited, whereupon a bench warrant was issued and his bond applied in payment of a $200 fine. He is claimed to be the brother of Elliott Wilkinson, eyesight swindler, now said to be serving a term in prison at Stillwater, Minn.

COLORADO

Society News.—Dr. Edward L. Harvey, Denver, addressed the Larimer County Medical Society at Fort Collins, June 1, on "Lower Cervical Cesarean Section."——The Weld County Medical Society was addressed, June 6, by Dr. George M. Blickensderfer, Denver, on "Acquired Heart Disease in Children."

DISTRICT OF COLUMBIA

Personal.—Surg. Rolla E. Dyer, U. S. Public Health Service, Washington, received the degree of doctor of laws from Kenyon College, Gambier, Ohio, June 20, in recognition of his recent work on endemic typhus fever. Dr. Dyer received his academic education at Kenyon College.

New Medical Laboratory.—The new laboratory building for teaching and research was recently completed at George Washington University Medical School. This building makes possible the reorganization of the fundamental scientific departments. With the remodeling of the old medical building, which will include segregating the departments of anatomy, pathology, physiology and pharmacology on separate floors during the summer, the school of medicine will possess facilities for advancing its program in medical education and investigative work. The new $75,000 structure will also house a central laboratory to serve the University Hospital and the clinical departments. Adjoining this is a fully equipped laboratory for the teaching of clinical microscopy, all under the supervision of a full time director who will develop this work in the department of medicine. The new building also provides a teaching laboratory for the department of bacteriology, hygiene and preventive medicine and offices and individual laboratories for the members of the department. The fourth floor communicates with the old medical school building, where will be located the department of pathology. The third floor of the new building will communicate with the department of biochemistry, while the second floor is connected with the medical library, now under the supervision of a trained librarian. Construction on a new addition to the University Hospital building began in May.

ILLINOIS

Licenses Revoked.—The state department of registration and education revoked the license of Dr. James L. Hawkins, Chicago, June 22, on his conviction of fraudulent misrepresentation in connection with the "American Society for the Conservation of Vision." The board revoked the license of Dr. Charles C. Keester, Wichita, Kan., July 7, on his conviction of first degree manslaughter (THE JOURNAL, April 16, p. 1386).

State Academy of Science.—Mr. Harry F. Ferguson, state department of public health, Springfield, was elected president of the Illinois State Academy of Science at its twenty-fifth annual meeting, at the University of Chicago recently. Harold R. Wanless, University of Illinois, is the secretary. Speakers included Fay-Cooper Cole, Ph.D., University of Chicago, on "The Coming of Man." One of the sectional meetings was devoted to a symposium on recent changes in food habits and their causes. A resolution was adopted protesting against the contemplated action of Congress in reducing so severely the appropriations for scientific research.

Chicago

Health Program on Navy Pier.—Physician members of the Chicago Woman's Club have been organized into the Navy Pier Committee to conduct a health program each Tuesday afternoon at 2:30, during July and August, on the Navy Pier, for the education of people who make the pier a recreation spot. The health lecture, which is given by a woman physician, is followed by a question box and preceded by a short program of music or other appropriate entertainment. Dr. Sara C. Buckley lectured on "Nature's Milestones," July 5; Dr. Alice I. Conklin, July 12, on "High Blood Pressure," and Dr. Julia C. Strawn, July 19, on "Safe Surgery." Future programs will be: August 2, "The Expectant Mother" by Dr. Effa V. Davis; August 9, "Mental Habits in Child Development," Dr. Josephine Young; August 16, "Feet," Dr. Anna E. Blount; August 23, "Adolescence," Dr. Lena K. Sadler, and August 30, "Treatment of the Common Cold," Dr. Alice K. Hall.

"Examination of School Children Abandoned."—Relative to the item with this title, which appeared in THE JOURNAL, July 9, Dr. Herman N. Bundesen, president of the Board of Health of the City of Chicago, writes:

"During the last fifteen years, 1,690,791 school children have been examined; 3,511,124 physical defects have been found, and 1,012,129 corrections of defects have been obtained.

"School children have been given physical examinations by this department since 1908. In 1916, the Municipal Tuberculosis Sanitarium assigned to the Board of Health for this purpose fifty physicians. In 1930, the services of twenty-five of these physicians were discontinued due to a curtailment in the budget of the Sanitarium.

"To control contagious disease, one hundred and twenty school health officers and field health officers are employed. During 1930, the remaining twenty-five Muncipal Tuberculosis

Sanitarium physicians, with some additional help given by the school health officers, examined 139,125 children.

"Recently, possibly since the issue of the July 9th JOURNAL, the City Council reconsidered the discontinuing of the twenty-five physicians and twenty-five nurses, formerly employed by the Muncipal Tuberculosis Sanitarium, and appropriated for them in the budget of the Board of Health."

INDIANA

Distribution of Physicians.—To make available information concerning the distribution of physicians, a survey in Indiana was recently made. The report in the *Journal of the Indiana State Medical Association* shows the population per physician in practice in Indiana; average age of physicians in actual practice; distribution of urban and rural population; change in population since the last census; roads of all types; distribution of general hospitals; special hospitals; state hospitals, sanatoriums for treatment of tuberculosis, and membership in local medical association; distance to nearest physician, and other items of interest. This study indicates that the younger physicians are going to cities rather than to rural districts; few communities in Indiana now need physicians; at the present rate of change, many counties in southern Indiana will in a few years be very much in need of physicians; modern industrial centers are producing few physicians, but are attracting many; rural and small town districts are producing many physicians but cannot hold them after they have graduated.

IOWA

Personal.—Dr. James D. Lowry, Fort Dodge, has been elected president of the state board of health.——Dr. Arthur Shannon Fourt, medical examiner in the student clinic at the university hospital, has been appointed medical supervisor, division of physical education, State University of Iowa, Iowa City, succeeding Dr. Leonard P. Ristine. The latter resigned to become superintendent of the state hospital for the insane at Cherokee.

Society News.—Dr. August R. Anneberg, Carroll, was elected president of the Twin Lakes District Medical Society at a meeting in connection with the annual clinics and picnic at Twin Lakes near Rockwell City, June 16. Three physicians in Carroll County were eligible for this honor, which goes to the oldest practicing physicians in the county, it was reported. The question was decided by drawing from the names of Drs. Anneberg and Henry R. Pascoe, Carroll, and Channing E. Wolfe, Coon Rapids. Dr. Paul W. Van Metre, Rockwell City, was reelected secretary.——The Austin Flint Cedar Valley Medical Society met in Waterloo, July 12. Dr. Maurice L. Blatt, Chicago, conducted a pediatric clinic and gave an address on "Neuromuscular Diseases of Children." Dr. Benjamin F. Wolverton, Cedar Rapids, conducted a heart clinic, and Dr. Frank R. Peterson, Iowa City, a surgical clinic. Addresses were presented by Drs. Walter L. Bierring, Des Moines; Leslie L. Carr, Clermont; Frank W. Porterfield, Waterloo, and Waltman Walters and Louis B. Wilson, Rochester, Minn.

MAINE

State Medical Meeting.—Dr. Elmer D. Merrill, Dover-Foxcroft, was installed as president of the Maine Medical Association, June 17, at the annual meeting in Rangeley. Dr. Warren E. Kershner, Bath, was made president-elect, and Dr. Philip Webb Davis, Portland, reelected secretary. The next annual session of the society will be held at Poland Springs, the date to be determined later. Speakers on the scientific program included Drs. De Forest C. Jarvis, Barre, Vt., on "The Respiratory Tract as a Guide to Acid or Alkaline Therapy"; Elliott C. Cutler, Cleveland, "Cardiac Surgery"; John A. Kolmer, Philadelphia, "Principles of Vaccine and Nonspecific Protein Therapy," and Judge W. R. Pattangall, chief justice, supreme court of Maine. Dr. Richard S. Buker, Kengtung, Burma, India, spoke at the annual banquet on "Five and One-Half Years' Medical Work in Kengtung, Burma." A scientific exhibit was a departure of the annual meeting this year. Conferences formed a large part of the program.

MARYLAND

Larger Appropriation for Charity Patients.—Johns Hopkins Hospital, through its board of trustees, has asked the supervisors of city charities, Baltimore, for a $50,000 increase in its annual appropriation. Since 1929 the hospital has received $20,000 a year from the city to help pay the cost of medical and surgical treatment it provides for charity patients. In the letter from the board of trustees, it is shown, the report stated, that for the year ended June 30, 1931, Johns Hopkins had spent $565,000 on the care of free patients, and that its estimated deficit as of June 30 last was $70,000. A deficit of $120,000 can be expected on the basis of present indications, according to the report.

Physicians Offer to Examine Children.—Physicians in Worcester County, following conferences with the county medical society, have offered to examine children whose parents are unable to pay for medical service at a definite time either in the office or at some designated place. Dr. Bradford Massey, Pocomoke City, the county health officer, is chairman of a special committee appointed by the society to arrange a schedule for these examinations. In most of the counties through the state, periodic health conferences were the first steps taken to provide some recognized means by which the infants and young children of parents unable to pay for medical service can have adequate medical supervision. Children examined in these conferences are referred to their own physicians for necessary advice and treatment. It is expected that if the Worcester County plan succeeds, it will have a far reaching influence on other counties in the state.

MASSACHUSETTS

Round Robin Among Classmates.—Five physicians recently marked the thirty-second anniversary of a college friendship with a dinner at the Worcester Country Club. These physicians have conducted a biweekly round robin correspondence since their graduation. The physicians are Drs. Albert E. Cross, Worcester; Edwin P. Ruggles, Boston; Edward W. Burt, Westport; George H. Rand, Livermore Falls, Maine, and Seth Ames Lewis, Springfield.

Dr. Mark Honored.—In recognition of the eighty-fifth birthday of Edward Laurens Mark, LL.D., Hersey professor of anatomy, emeritus, Harvard University, a dinner was given in his honor by colleagues, friends and former students. The following speakers were introduced by Herbert W. Rand, Ph.D., of Harvard University: Charles B. Davenport, Ph.D., of the Carnegie Institution; Ephraim Emerton, Ph.D., Edwin H. Hall, LL.D., and Frank W. Taussig, LL.D., Harvard University; Dr. Fred B. Lund, Boston; Dr. Frederic T. Lewis, Harvard University Medical School; Herbert V. Neal, Ph.D., Tufts College; Robert P. Bigelow, Ph.D., of the Massachusetts Institute of Technology, and Prof. John F. Fulton, Jr., of Yale University School of Medicine. Dr. Mark also spoke.

MINNESOTA

Personal.—Dr. Halbert L. Dunn, formerly medical statistician at the Mayo Clinic, Rochester, has been appointed superintendent of the University of Minnesota Hospitals, Minneapolis. He succeeded Mr. Paul H. Fesler, who resigned to become superintendent of Wesley Memorial Hospital, Chicago.——Dr. Herbert E. Chamberlain has resigned as director of the Minneapolis Child Guidance Clinic at Lymanhurst Hospital-School, Minneapolis, effective September 1. He has accepted the position of associate professor of psychiatry at the University of Chicago.

Fined for Lack of Basic Science Certificate.—Herman C. Frerichs, who claims to be a naturopath, was sentenced, June 2, to pay a fine of $100 or serve thirty days in the workhouse for practicing healing without a basic science certificate. He paid the fine. Frerichs maintained an office in St. Paul for the purpose of practicing naturopathy. He claims to be a graduate of Heidelberg but is unable to produce any credentials, the state board reports. Following his arrest, April 12, Frerichs removed the signs from the front of his home and was instructed by the judge to remove his listings from the telephone and city directories. He claims that he has been engaged in the healing art for twenty-one years. His activities were first called to the attention of the board early in 1930 and, following an investigation, Frerichs agreed in writing to refrain from practicing healing in the future. His failure to comply led to his arrest.

MISSISSIPPI

Pike County Lectures.—Following a plan to have at least eight lectures and clinical days during 1932, the Pike County Medical Society and physicians in adjoining counties have been attending the following program offered by guest speakers:

Dr. Charles J. Bloom, professor of pediatrics, Tulane University Graduate School of Medicine, "Uses of Calcium in the Treatment of Certain Respiratory Diseases."

Dr. James G. Carr, professor of medicine, Northwestern University Medical School, Chicago, "Jaundice."

Dr. Edward W. A. Ochsner, professor of surgery, Tulane University School of Medicine, "Complications of Appendicitis."

At a recent meeting of the Pike County Medical Society, Dr. Taswell Paul Haney, Jr., was elected secretary.

NEW JERSEY

Health at Trenton.—Telegraphic reports to the U. S. Department of Commerce for eighty-five cities with a population of 37 million for the week ended July 2 indicate that the highest mortality rate (18.9) appears for Trenton and the rate for the group of cities as a whole, 10.1. The mortality rate for the corresponding period last year for Trenton was 11.4 and for the group of cities, 12.5. The annual rate for eighty-five cities for the twenty-six weeks of *1932* is 12 as against a rate of 12.9 for the corresponding periods of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

NEW YORK

Personal.—The honorary degree of doctor of laws was conferred on Dr. Grant C. Madill, Ogdensburg, by New York University, June 8. Dr. Madill was president of the Medical Society of the State of New York in 1919.——Dr. Mary J. Kazmierczak, Buffalo, was elected president of the Women's Medical Society of New York at its annual meeting in Buffalo, May 23.——Dr. George Fletcher Chandler was recently appointed police commissioner of Kingston.——The honorary doctorate of science was conferred on Strashimer Alburtus Petroff, director of the Trudeau (N. Y.) Sanatorium laboratory, at the annual commencement of Colgate University, Hamilton.

Public Health Centennial.—The one hundredth anniversary of the establishment of public health service in Syracuse was signalized by a special program held during the meeting of the American Association for the Advancement of Science during the week of June 20. Dr. Thomas Parran, Jr., state health officer, and Dr. Wilson C. Smillie, Boston, among others, spoke on the advancement of pubic health during the century and on the common cold, respectively. A local newspaper issued a special edition describing the advances in medicine during the past hundred years. Syracuse was the first city in its population group to receive the award of the United States Chamber of Commerce in the health conservation contest.

Sale of Raw Milk Regulated.—The board of health of Waterville, Oneida County, recently adopted a resolution requiring that ". . . no person shall sell, offer for sale, serve or distribute in the village of Waterville, New York, any 'Grade A Raw' milk or 'Raw' cream which has been produced from any animal which is not free from Brucella abortus infection as indicated by the standard agglutination test of such animal's blood made at intervals of not more than two months, unless after two successive clean tests a longer interval may be approved in writing by the health officer." Another resolution was adopted prescribing a civil penalty for violation of or failure to comply with orders or regulations of the board of health or provisions of the state sanitary code.

New York City

Society News.—Dr. William Klein was elected president of the Bronx County Medical Society, June 15, and Dr. Isidore J. Landsman, secretary.——Dr. George A. Auden, Birmingham, England, addressed the Medical Society of the County of Queens, recently, on "Organization of a School Medical Service in a Large City."

Quacks Barred from the Streets.—Quacks and charlatans who hawk medical nostrums and misinformation concerning diseases are barred from the streets of New York by an addition to the sanitary code recently adopted by the board of health, effective July 1. It is said that complaints have been received that gullible persons have been made ill by the fakers' concoctions.

After-Care of Poliomyelitis Patients.—According to the New York *Times*, the clearing house for poliomyelitis cases, organized by the commissioner of health to follow all cases of infantile paralysis of the 1931 epidemic, reported that after-care had been given to 3,252 children. Of these, 1,912 cases still showed residual paralysis this summer, and complete recovery had occurred in 1,340 cases.

Personal.—Dr. Henry James Spencer has been appointed director of the Second (Cornell) Medical Division of Bellevue Hospital, and assistant professor of clinical medicine in the Cornell University Medical College. He succeeds Dr. Eugene F. Du Bois in the former position.——Dr. Oscar M. Schloss, professor of pediatrics, Cornell University Medical College, has been appointed pediatrician-in-chief of the New York Hospital. He will head the Children's Hospital at the new medical center, giving full time to this work and research and teaching.

NORTH CAROLINA

Personal.—Dr. Thurman D. Kitchin, president and dean of the department of medicine, Wake Forest College, Wake Forest, received the honorary degree of doctor of laws at the recent commencement at Duke University.——Dr. James Bell Bullitt, Chapel Hill, was elected president of the North Carolina Academy of Science at its recent annual meeting.

State Board Reorganized.—New members of the state board of medical examiners appointed by the state medical society at its recent annual meeting are Drs. Kirby G. Averitt, Fayetteville; James W. Vernon, Morganton; William H. Smith, Goldsboro; Hamilton W. McKay, Charlotte; Benjamin F. Royal, Morehead City; Franklin Webb Griffith, Asheville, and Benjamin J. Lawrence, Raleigh. Dr. Averitt was elected president for one year and Dr. Lawrence, secretary for six years. The entire membership is new, the terms of all members of the previous board having expired this year.

OHIO

A Bust of Banting.—A bust of Dr. Frederick G. Banting, Toronto, co-discoverer of insulin, will be unveiled at a summer camp for diabetic children near Cleveland, July 31. Dr. Banting will be present at the ceremony, which is sponsored by Dr. Henry J. John and the directors of the camp.

Hospital News.—The Peoples Hospital, Akron, announces the establishment of an outpatient department, the gift of Mr. and Mrs. Stanley H. Austin, in memory of their son, who died in 1931. Mr. R. E. Kepler has been appointed superintendent of the hospital and Dr. Edward L. Voke, New York, radiologist.

Personal.—The Canton Medical Library Society sponsored a banquet, June 1, in honor of six physicians who had completed fifty years of medical practice. Honor guests were Drs. Edgar J. March, Edward P. Morrow, Canton, and Milton M. Bauer, Uniontown; George A. Kelley, Allen W. Budd, Canton, and Seth Hattery, Massillon.——Dr. William E. Thompson, Bethel, is reported to have celebrated his ninety-seventh birthday, July 6. He is said still to conduct a limited practice.

Study of Whooping Cough.—A grant of $25,000 from the Rockefeller Foundation to finance a four-year study of whooping cough has been announced by Western Reserve University. Dr. Gerald S. Shibley, associate professor of medicine in the medical school, will conduct the investigation, which will cover etiology, prevention, diagnosis and treatment. Cases appearing in the dispensary of Lakeside Hospital and in the community will furnish the material for observation. Dr. James Angus Doull, professor of hygiene and public health, will cooperate in the study.

Society News.—Dr. Andre Crotti, Columbus, addressed the Madison County Medical Society, London, June 30, on diverticulum of the esophagus.——Dr. Chester D. Christie, Cleveland, addressed the Mahoning County Medical Society, Youngstown, June 21, on diabetes.——Dr. Franklin C. Beeks, Portsmouth, among others, addressed the Adams County Medical Society, June 15, on urology as it concerns the general practitioner.——Dr. Karl D. Figley, Toledo, made an address on treatment of hay fever and pollen asthma before the Auglaize County Medical Society, June 16, in Minster.——Dr. Arthur G. Helmick, Columbus, addressed the Athens County Medical Society, June 6, on "Diarrheal Diseases of Children."——Dr. Mark Millikin, Hamilton, made an address before the Crawford County Medical Society, Bucyrus, June 6, on the social aspects of medicine.

PENNSYLVANIA

Personal.—Dr. Frank F. D. Reckord, Harrisburg, recently received the honorary degree of doctor of science from Gettysburg College, Gettysburg, during its centennial anniversary.——Dr. Frederick Whitney Davis, Scranton, has been appointed health officer of Lackawanna County, succeeding Dr. Frank R. Wheelock.——Dr. Harold L. Foss, Danville, received the honorary degree of doctor of science at the annual commencement of Bucknell College, Lewisburg, June 6.

Society News.—Drs. Joseph H. Barach, Pittsburgh, and Henry W. Salus, Johnstown, addressed the Cambria County Medical Society, Johnstown, July 14, on "Blood Pressure" and "Historical Diseases and Their Conquerors," respectively.——Dr. Charles H. Mayo, Rochester, Minn., among others, addressed the meeting of the fourth councilor district of the Medical Society of the State of Pennsylvania, Eagles Mere, June 18, on "The Sympathetic Nervous System in Control of Bodily Functions."

Philadelphia

Hospital News.—A fund of $1,000,000 was recently appropriated to the Navy Department by the United States Senate to allow immediate construction of the new Philadelphia Naval Hospital.

Personal.—Helen Dean King, Ph.D., Bryn Mawr, of the staff of the Wistar Institute of Anatomy and Biology, was one of the recipients of the Ellen Richards research prize of $2,000 recently awarded by the Association to Aid Scientific Research by Women, in recognition of her research in genetics. Annie J. Cannon, Sc.D., astronomer at Harvard University, Cambridge, Mass., shared the award with Dr. King.

RHODE ISLAND

Society News.—Drs. Eske H. Windsberg and Samuel Morein addressed the Providence Medical Association in May on "Thoracoplasty in the Treatment of Chronic Pulmonary Tuberculosis" and "Diaphragmatic Hernia, Symptomatology and Diagnosis," respectively.——Dr. Cecil C. Dustin, Providence, addressed the Washington County Medical Society, Charlestown, July 13, on anemia.

WEST VIRGINIA

Society News.—A symposium on obstetrics was a feature of a recent meeting of the Mercer County Medical Society; the speakers were Drs. Harry G. Steele, Bluefield; Evans M. Tanner, Bluefield, and John I. Markell, Princeton.——The Logan County Medical Society was addressed, June 15, by Drs. William W. Strange, Huntington, on "Comments on Acute Appendicitis," and William Edwin Matthews, Huntington, "Management of Gonorrheal Urethritis."——Dr. Walter W. Point, Charleston, discussed "The Average Normal Case of Pregnancy" before the Mingo County Medical Society, June 9, in Williamson.——The Kanawha County Medical Society was addressed, June 14, by Drs. Rome H. Walker, Charleston, on "Local Anesthesia in Treatment of Fractures," and Roy O. Halloran, Charleston, "Some Common Skin Affections."

WISCONSIN

Old Apparatus Presented to Museum.—Dr. Joseph L. DeCock, Green Bay, recently presented a valuable medical set to the Public Museum of Green Bay. According to the *Wisconsin Medical Journal*, the set is from 75 to 100 years old, and includes two types of scarificators; alcohol lamp, suction cups and a cupping device.

Society News.—Dr. Hansford H. Milbee, Marshfield, read a paper on "Coronary Disease" before the Clark County Medical Society recently, and Dr. John E. Gonce, Jr., Madison, spoke on "Restlessness in Infancy."——The Eau Claire and Associated Counties Medical Society was addressed in Eau Claire, June 13, by Dr. George W. Beebe on "Diagnosis of Tuberculosis."——Speakers before the Fourth Councilor District Medical Society in Lancaster, June 7, included Drs. Horace K. Tenney, Jr., Madison, on "Differential Diagnosis of Hypertrophic Pyloric Stenosis," and Francis D. Murphy, Milwaukee, "Bright's Disease and Its Management."

Personal.—Dr. Arthur F. Stueck has been appointed coroner of Manitowoc County, succeeding the late Dr. William G. Kemper.——Dr. Arthur J. McCarey, Green Bay, recently received from the war department the Medal of the Purple Heart, for exceptionally meritorious and conspicuous services with the fourth division, American Expeditionary Forces.——Dr. and Mrs. J. W. Burns, Appleton, celebrated their sixtieth wedding anniversary, June 30. Dr. Burns is said to have been the first white child born in the village of Oakfield.——Dr. Frederick J. Woodhead, Waukesha, was appointed city physician to succeed Dr. Arthur J. Williams.

GENERAL

Warning Against Impostor.—A number of physicians and nurses in Indiana and Michigan have been victimized by a man claiming to be a representative of the physicians' supply firm of Frank S. Betz Company of Hammond, Ind. His method is to call on physicians, show a catalogue of the firm, and take orders for goods, securing cash or partial cash payment and leaving town before being caught. This man has called himself by various names, including Leo Cooper, T. W. Scott and J. B. Thompson. He has dark hair and eyes and a very tanned complexion, is about 5 feet 6 inches tall, and weighs about 135 pounds. He appears to be about 35 years old. In one instance he offered a highly attractive trade-in proposition on a blood pressure apparatus and persuaded the physician to let him carry away the old apparatus. Members of the profession are warned to be on the lookout for this man.

Deaths from Alcoholism.—Reports recently issued by the U. S. Bureau of the Census indicate that 4,158 persons died of alcoholism in 1930 in the death registration area, which includes forty-seven states (Texas the exception) and the District of Columbia. This represents a rate of 3.5 per hundred thousand estimated population, compared with 3.7 in 1929 and 4 in 1928. Nevada had the highest rate of any state, 14.3; South Dakota the lowest, 1. Rhode Island was second, with a rate of 8.3. Charts showing the rates since 1910 record the highest death rate during that period (5.9) for 1913; the lowest (1) for 1920. The highest number recorded is 4,627 for 1928 with forty-four states reporting; the lowest, 900 for 1920, with thirty-four states reporting. In 1910, when the death registration area included only twenty-one states and the District of Columbia, 2,909 deaths were reported.

Society News.—Dr. Henry S. Plummer, Rochester, Minn., was elected president of the American Society for the Prevention of Goiter at the annual meeting in Hamilton, Ont., in June.——Dr. Arthur N. Collins, Duluth, was elected president of the Great Northern Surgeons' Association at its annual meeting in Duluth, Minn., recently. Dr. Roscoe C. Webb, Minneapolis, is the secretary. The next annual meeting of the association will be held in Portland, Ore., June 15-17.——The fourth congress of the Pan American Medical Association will be held in Dallas, Texas, beginning March 21, 1933, according to an announcement by the executive committee. The committee has appointed Dr. John O. McReynolds, Dallas, president of the association, to succeed Dr. Aristides Agramonte, who died in August, 1931.——In the medical section of the American Prison Association, which will hold its sixty-second congress in Indianapolis, October 3-6, speakers will include Drs. Earl D. Bond, Philadelphia, on "Behavior Disorders Following Encephalitis"; Paul C. Bucy, Chicago, "Surgical Treatment of Traumatic Epilepsy," and Max A. Bahr, Indianapolis, "Psychiatry in Relation to Crime."

Safeguarding Bequests for Hospitals.—The Revenue Act of 1932, recently enacted by Congress, imposes no federal inheritance tax on hospitals that receive bequests, as some hospital officials have thought. The purpose of section 807 of the new act is not to impose an inheritance tax on hospitals but to limit the deduction for charitable bequests under the estate tax law to such amounts as the testator has in fact or in law devised or bequeathed to charity. Under the old act, absurd results were reached. If a testator gave his residuary estate to charity and directed that federal and state death duties be paid out of such residuary estate, the result might be that nothing was left for charity. In such cases, notwithstanding the fact that charity received nothing, the old law allowed a charitable deduction from the gross estate of a wholly fictitious sum; namely, what the testator would have given to charity if the federal and estate death duties had not absorbed the whole of the residuary estate. Charitable bequests to hospitals may be safeguarded if the testator makes provision for such bequests before inserting a residuary clause in his will, or if he provides in his will a special fund for the payment of federal and state death duties.

Congress of Physical Therapy.—The eleventh annual session of the American Congress of Physical Therapy will be held at the Hotel New Yorker, New York, September 6-9. Dr. F. Howard Humphris, London, England, the foreign guest, will have for one of his topics "Artificial Sunlight in the Treatment of Health." Other speakers will include Drs. Gustav Kolischer, Chicago, the incoming president, "Further Considerations of Diathermy in Malignancy"; Edgar Mayer, Saranac Lake, N. Y., "Physical Therapeutic Measures in Treatment of Tuberculosis"; Alexius M. Forster, Colorado Springs, "Sanitoria Aspects of Tuberculosis with Special Reference to Nonsurgical Methods of Treatment"; Ira I. Kaplan, New York, "Radiation Therapy in Medicine—Its Function and Application"; Grant E. Ward, Baltimore, "Factors Influencing End-Results of Electrosurgery"; Victor E. Levine, Omaha, "Disease and Climate"; Frank H. Krusen, Philadelphia, "Physical Therapy: An Aid to Routine Medical and Surgical Practice"; Norman E. Titus, New York, "Traumatic Synovitis"; William Martin, Atlantic City, "Types of Circulatory Stasis: Their Treatment by Physical Measures"; William H. Kennedy, Indianapolis, "Radium Treatment of Lesions About the Head, Face and Neck"; Joseph Prenn, Boston, "Physiological Aid to Hearing and Its Systematic Reeducation"; Charles A. Stimson, Eaton Rapids, "Observation with Castor Oil and Its Derivative Sodium Ricinoleate"; Frederick H. Morse, Boston, "Abortive Treatment of Threatened Colon Malignancy." Symposiums will also be a part of the program, including those on tonsil electrosurgery, fever therapy, arthritis, electrocardiography and urology. Clinics will feature the activities of the congress on Saturday, September 10, in various hospitals throughout the city.

Medical Bills in Congress.—*Changes in Status:* H. R. 4743 has been approved by the President, providing federal subsidies for the promotion of vocational rehabilitation of persons disabled in industry or otherwise (Public Law 222). H. R. 7518 has been reported to the Senate, with amendment providing that the President, under such regulations as he may prescribe, may authorize the board of health of the Canal Zone to issue licenses to practice the healing art, which regulations shall state the conditions under which such licenses shall be issued and include provisions for revocation of licenses for cause (S. Rept. number 940). H. J. Res. 361 has passed the Senate, without amendment, authorizing the Surgeon General of the United States Public Health Service to make a survey as to existing facilities for the protection of the public health in the care and treatment of leprous persons in the territory of Hawaii. *Bills Introduced:* S. Res. 271, by Senator Bingham, Connecticut, to request the Surgeon General of the United States Public Health Service to make inquiry among the leading physicians and chemists in the United States as to the amount of alcohol a beverage may contain without being intoxicating. S. 4927, by Senator Wagner, New York, to provide compensation for disability or death resulting from injury to employees engaged in interstate and foreign commerce, and in commerce solely within any territory or the District of Columbia. It provides, among other things, that the employer shall furnish such medical, surgical and hospital service as the nature of the case may require, the physician or hospital, apparently, to be selected by the employer. It provides that all fees shall be limited to such charges as prevail in the same community for similar treatment of injured persons of like standard of living and shall be subject to regulation by a "Federal Interstate Commerce Compensation Commission," created by the bill. H. R. 12843, by Representative McCormack, Massachusetts, to change the name of the retail liquor dealers' stamp tax in the case of retail pharmacies to "medicinal spirits stamp tax."

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Mary's Free Hospital for Children, New York, $50,000 by the will of the late Edward B. Sexton.

Long Island College Hospital, Brooklyn, $5,000 by the will of Henry E. McGowen.

St. Mark's Hospital, New York, $10,000 by the will of Henry F. Homes.

Knickerbocker Hospital, New York, $10,000 by the will of James C. McGuire.

Lebanon and Mount Sinai hospitals, New York, $10,000 by the will of Bernhard Mayer.

Presbyterian Hospital, Philadelphia, $1,000 by the will of John J. Shaw.

Methodist Episcopal Hospital, Brooklyn, $25,000 by the will of the late James Hamilton Gill.

Peekskill Hospital, Peekskill, N. Y., $5,000 by the will of the late David W. Erskine.

Lawrence Hospital, Bronxville, N. Y., $123,365 by the will of Mrs. Caroline C. Newcomb.

Stuyvesant Square Hospital, New York, $22,500 by the will of Arthur J. Slade.

Monticello Hospital, Monticello, N. Y., $3,500 by the will of Mrs. Clara Michaelson.

Pottsville Hospital, Pottsville, Pa., $6,000 by the will of Emma L. Spiese.

North Adams Hospital, North Adams, Mass., $20,000 by the will of Mary Agnes Blackinton.

Gaylord Farm Sanatorium, Wallingford, Conn., $5,000 by the will of George P. McLean, Simsbury.

St. Mary's Hospital, Green Bay, Wis., $15,000 by the will of Mrs. Margaret A. Diamond.

Long Island College Hospital, Brooklyn, $5,000 by the will of the late Mrs. Amelia P. Dixon.

Seton, Saint Francis, St. Vincent's, French, New York and Babies hospitals, all of New York, about $7,100 each by the will of Mrs. Clara A. Baab.

St. Mary's Hospital for Children and Stuyvesant Square Hospital, New York, $16,837 each, and St. Luke's Hospital, $10,103 by the will of Mrs. Hannah M. Lydig.

Mount Sinai Hospital, $30,000; Montefiore Hospital, $10,000; and Hospital for Joint Diseases, $5,000 by the will of the late William R. Rose. All are in New York.

Norwegian Lutheran Deaconesses' Home and Hospital, Brooklyn, $5,000 by the will of the late Mrs. Tecla Jensen Eagle.

French Hospital, $10,000; Mount Sinai and Montefiore hospitals, $5,000 each by the will of the late Mrs. Jeannette D. Beaumont. All are in New York.

St. Luke's Hospital, New York, $927,500 by the will of Miss Laura Shannon.

Hartford Hospital, Hartford, Conn., $23,000 by the will of the Misses Lillian and Anna Andrews.

Albany Hospital, Albany, N. Y., $15,000 by the will of Mrs. L. T. Lansing.

Albany Hospital for Incurables, Albany, N. Y., and Samaritan and Troy hospitals, Troy, N. Y., are beneficiaries of a total of $100,000 from the will of Howard D. Bonesteel.

Western Reserve University School of Medicine, Cleveland, $300,000, anonymously given, to endow the Oliver Payne professorship of surgery.

Presbyterian Hospital, Philadelphia, $7,500 by the will of Miss Ida V. Eisen.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 25, 1932.

Report on Mental Deficiency

A committee was appointed by the council of the British Medical Association in November, 1930, to report on the medical problems presented by mental deficiency, especially with regard to the methods suggested to reduce its incidence and on the facilities for medical education on the subject. The committee which contained a number of experts on the subject, has now presented a report. In the causation, heredity is held to play an important part, but the evidence does not allow an expression of opinion as to the percentage of cases attributable to it. To assist investigation, the committee recommends that in the registration of marriages any blood relationship between the parties should be stated. Mendelian heredity was exemplified by a few records, in which mental deficiency appeared as a dominant. In family amaurotic idiocy it appeared as a recessive. But there is no simple genetic basis of mental deficiency in general. The applicability of the mendelian theory in heredity proves the possibility of human "carriers" of both physical and mental characters, as is illustrated in hemophilia.

In regard to the diagnosis of mental deficiency, the committee finds a high correlation between scholastic and social incapacity; nevertheless the two are not identical. Certain individuals may be socially defective and yet present no scholastic defect: conversely, certain children may present considerable scholastic incapacity but subsequently prove to be socially capable. Hence the certification as mental defectives of children who are merely defective in scholastic educability may impose a stigma on them which subsequently may operate to their disadvantage.

In the care of mental defectives, the committee considers that the large colony has great advantages, since it is possible to organize a wide variety of employment and to secure for every inmate, even of the low grades, a suitable occupation. Moreover, the higher grades can be separated and specially trained with a view to eventual replacement in the community under supervision. When a diagnosis of mental deficiency has been made, the patient should always be transferred to an institution. Provision must be made for (1) the education and training of mental defectives to the full extent of their powers, (2) a carefully selected environment within the general community for defectives suitable for it, and (3) the appointment of officers (preferably medical psychologists) to determine whether those guilty of antisocial offenses are mental defectives and, if so, to have them replaced in colonies.

STERILIZATION

On the disputed question of sterilization of mental defectives, the evidence "indicates that if this operation should be applied only to certifiable mental defectives, the incidence would not be appreciably reduced. To be really effective, the operation would have to be applied to many who are not certifiable mental defectives. That there are large numbers of mendelian 'carriers' of mental deficiency now at large in every civilized community is certain, but since they appear normal, it is not practicable to suggest that they should be sterilized." Notwithstanding the advocacy of sterilization by eminent eugenists, the committee holds that even widely applied sterilization of mental defectives would cause no appreciable difference in the number in the community for many generations. But there is a small number of mental defectives in respect of whom the chief social danger is propagation and who, were this danger removed, could live in the community. In such cases sterilization might be an appropriate subject to the following conditions: (1) restriction to suitable case; (2) not utilizing it to permit the discharge from institutions of those incapable of living in the community; (3) adequate supervision of those sterilized to prevent promiscuous sexual intercourse and the spread of venereal disease. The committee notes with satisfaction that the government has appointed a body to investigate this question completely.

The committee also emphasized the need for greater facilities for instructing students in mental deficiency.

Lord Moynihan's Tribute to W. W. Keen

One of the things in which Lord Moynihan excels is a keen sense of the personal qualities of his compeers, and in the grace with which he can express it. Writing to the *Lancet* on the news of the death at the age of 95 of his "very dear old friend Dr. Keen," he says: "His eagerness in every form of intellectual pursuit never ceased to astonish his friends, sometimes even perhaps to embarrass them, for in pursuit of knowledge he spared no man. . . . His textbook of surgery was the first in our language to be based on bacteriology; it almost alienated our affections from 'Erichsen.' Many men considered him—though having heard Nicholas Senn and J. B. Murphy, I could never agree—the greatest teacher of clinical surgery America had ever known. His virility and force were well matched with sincerity and invulnerable accuracy, and tempered with sobriety." He was the protagonist of our ideas on vaccination, vivisection and laboratory research. "He was a man of decided views emphatically expressed; but he was, no less, the very flower of culture, the very perfume of courtesy. He had the happiest knack, excelled not even by Osler, of keeping in touch with his friends in all lands. It was justly said of Osler that many men in many lands hugged the belief that they were his particular cronies. That was certainly true of Keen." Coming to technical matters: "His work on the brain, nervous system, abdominal organs, upon the ravages of typhoid fever in their surgical relations, indeed upon all branches of surgery—and he practiced all with immense success—was perhaps the most considerable and the most inspiring of that of any surgeon in the States."

PARIS

(From Our Regular Correspondent)

June 15, 1932.

International Congress on Asthma

The program of the general congress of medicine has become so vast that congresses covering a narrower range of subjects, or which deal with the profound consideration of a single question, are becoming more numerous. In France, the mineral spring resorts, owing to their numerous hotels, are particularly suitable for the holding of this type of congress, especially if the disease under discussion is one of the diseases that the resort essays to cure. For example, there has been a congress of biliary lithiasis at Vichy, another at Vittel, and a congress on asthma at Mont Dore, which is known as a center for that disease. Prof. Fernand Bezançon presided at the congress. There were thirty-one communications—French and foreign. Mr. Bezançon opened the session with a masterful presentation of the medical theories pertaining to asthma. He reached the conclusion that one must assume an eclectic attitude and that every theory corresponds to certain particular types. Asthma is a syndrome resulting from widely different causes and not a disease of uniform etiology. The theory of asthma-neurosis and the theory of diathetic asthma shared, for a long time, the favor of clinicians. The discovery of anaphylaxis appears to have weakened these theories somewhat. Mr. Bezançon thinks, however, that anaphylaxis should strengthen these theories. Over against these theories that attribute to asthma general causes, Benzançon and his followers have in recent years emphasized the importance of the local, respiratory factor. The careful study to which they subjected the various forms of attacks, equivalents, precipitating causes, and kindred morbid relationships, caused them to assume at least two distinct types: one, diathetic, generally hereditary, often associated with other morbid manifestations; the other, acquired, and, so to speak, purely respiratory. A third type, which has some of the characteristics of each of the two others, is infantile asthma. This eclectic conception leads naturally to an eclectic mode of treatment. Mr. Pasteur Vallery-Radot spoke on the rôle of anaphylaxis in asthma—which he regards as important, and sometimes preponderant, but which, in his opinion, cannot explain all the cases. Mr. E. Bernard confined himself to a study of the nervous factors in asthma, a peculiar instability of the neurovegetative system and of a special sensitiveness of the bulb. Mr. Cordier of Lyons pointed out the rôle of the liver and the endocrine glands in asthma. Mr. Haibe of Namur considered asthma of "respiratory spine," of microbic origin; Mr. Halphen, the rôle of nasal lesions in the determination of asthma; Mr. Bourgeois, the equivalents of asthma (spasmodic coryza and all spasmodic attacks); Mr. Jacquelin, the kindred morbid relationships of asthma; Mr. Lesné and Mlle. Dreyfus-Sée, the etiology, pathogenesis and treatment of infantile asthma, which subject was likewise treated by Mr. Péhu of Lyons; Mr. Joltrain, the treatment of the asthmatic attack; Villaret and Justin Bezançon, the thermal and climatic treatment of asthma; Mr. Biancani, the physical therapeutic treatment of asthma; Professor Leriche and Mr. Fontaine, the surgical treatment of asthma, and Mr. J. Galup, the treatment of asthma at Mont Dore. Of the foreign authors, Mr. Carl Prausnitz of Breslau discussed the rôle of idiosyncrasy in asthma; Mr. McDowall of London, the physiologic aspects of the asthmatic attack; Mr. Bray of London, the hereditary factor in hypersensitiveness in general and in asthma in particular; Mr. Oriel of London, the factors of allergy in asthma; Mr. Mariano Castex of Buenos Aires, the factors of bronchial asthma; Professor Maranon of Madrid, endocrine asthma, and Mr. Storm Van Leuven of Leyden, the influence of the sun and of the climate on asthma. Frugoni and Melli of Rome assumed no other pathogenesis for asthma than allergy, and gave some observations on the transmission of this allergy from man to man. Mr. Danielopolu of Bucharest explained his theory of the reflex circuit; Mr. Longcope of Baltimore called attention to recent American researches on asthma, and espoused the thesis of Rackemann, who assumes an allergic type (40 per cent of the cases) and another type not exclusively allergic, in which an infection of the respiratory tracts intervenes.

Discontinuance of the Société de l'Internat des Hôpitaux de Paris

The former interns of the hôpitaux de Paris established, April 28, 1904, a fraternal and scientific society, which played a certain part—especially before the war—in studying questions pertaining to the organization of hospital services in connection with competitive examinations for the securing of various medical professional degrees, and particularly in maintaining the prestige of the title of "former intern." The society held periodic scientific meetings and published at regular intervals a bulletin. Now the society has dissolved. Those of its members who became later hospital physicians or surgeons or specialists deserted it for the learned societies representing their specialties. Those who had confined themselves to general medical practice lost interest. Dr. Jayle, the secretary who recently announced its discontinuance, recalled the part it had played and the numerous brilliant lectures that it had organized, but admitted that it had outlived its usefulness.

Permission to Use Lecithin in the Manufacture of Chocolate Refused

The minister of public health consulted the Academy of Medicine in reference to the request of the manufacturers of chocolate that they be authorized to use a small amount of lecithin derived from vegetable substances, notably the soy bean, in their manufacturing processes. The academy appointed a special committee to prepare the response to be sent to the ministry. Mr. G. Bertrand was called on to draw up the report of the committee. The conclusion of the report was to the effect that:

> The decree of Dec. 19, 1910, having prohibited the use, in the manufacture of sweetmeats, confectionery and chocolate articles, of coloring matter or aromatic chemical products other than those the use of which is declared permissible and whose mode of use is regulated by this decree, the Academy of Medicine recommends that the authorization requested by the chocolate manufacturers be denied.

The use of lecithin under the conditions proposed will, therefore, be regarded as an adulteration.

BERLIN

(From Our Regular Correspondent)

May 20, 1932.

The Toxicity of Combustion Products of Motor Fuels

Too little is known among physicians concerning the toxicity of motor fuels and their combustion products. Dr. Liesegang, member of the Prussian Landesanstalt fur Wasser-, Boden- und Lufthygiene in Berlin-Dahlem, has reported on the subject, on the basis of his research. He has already contributed to the knowledge of the carbon monoxide content of exhaust gases (1928). On the basis of his observations, rules for the prevention of accidents were published, and the information and the warnings contained therein have reduced considerably, in recent years, the number of poisonings resulting from exhaust gases. The question as to whether, aside from carbon monoxide poisonings in garages, also chronic toxic effects may be produced by components of exhaust gases—for example, in the circulatory system or in the lungs—cannot be answered with certainty as yet. It will doubtless be difficult to furnish proofs of either a positive or a negative opinion. Since 1928, further research on motor fuels has been carried out. In the open, carbon monoxide is diffused so quickly, because of the air suction and the wind, that in the streets of large cities, even though the traffic is heavy, carbon monoxide poisoning is virtually excluded. Aside from carbon monoxide, saturated and unsaturated hydrocarbons, aromatic and alipathic alcohols, aldehydes and ketones may be present and possibly lead to chronic injuries. The motor fuels themselves are to be considered as possible toxic factors only where power fuels are stored or are shifted; for example, in filling stations. As a rule, it is only a question of the products of complete or partial oxidation of the motor fuels or oils. There are, as is well known, various mixtures of motor fuels on the market, and it is probable that further new mixtures will be tried. Liesegang reaches the conclusion that intoxications from the vapors of benzine, benzene and methyl alcohol lead only rarely to enduring injuries. When that occurred it was owing to the fact that the fluids concerned had been caused to vaporize. In any event, it appears necessary to examine the toxic qualities of a new motor fuel that contains a certain proportion of methyl alcohol, and the federal public health service has already such an inquiry under consideration.

Arsenic Poisoning from Contaminated Wine

Recently there appeared, in French and German newspapers, accounts that on board various French merchantmen more than 300 French officers and sailors had been taken ill following the drinking of wine, and, for the most part, had to be hospitalized. Two of the victims had already succumbed. The symptoms were explained by the demonstration of considerable quantities of arsenic in the wine. According to a statement of Professor Mühlens in the *Deutsche medizinische Wochenschrift,* six further cases were observed in the Hamburg Institut für Schiffs- und Tropenkrankheiten, in the crew of another steamer. The illness, which affected nearly the whole crew of thirty-two men, is said to have developed during a voyage to Africa, beginning in February, 1932. The symptoms were typical for arsenic poisoning: gastro-intestinal symptoms, exudative dermatitis, with subsequent melanodermia and hyperkeratoses, eye symptoms, and the like. The diagnosis and the cause were soon clarified. The ship's crew had filed a complaint with the French general consul in Hamburg to the effect that the wine on board their boat was contaminated. The crews of French ships receive a daily allowance of 1 liter of red wine. The wine was subjected to a chemical analysis in Hamburg, which showed that it contained considerable quantities of arsenic and sulphurous acid. According to a statement in the French press, in France from 3 to 12 mg. of arsenic per liter of wine was shown to be present. The wine had been taken on board in Havre without payment of duty and was said to be of Spanish origin. The question as to how the arsenic got into the wine is not yet settled. A plausible assumption is that the grapes were seriously contaminated with arsenic by the spraying of the vines with copper sulphate or other arsenic-containing solutions to protect them against insects. Sulphurous acid may have got into the wine from applying sulphur to the wine casks in the cleansing process. There is another possible explanation—namely the addition of arsenic-containing sugar, or the like, to the wine. A similar group-poisoning from wine was reported from Toulon and vicinity in 1888 (500 cases of illness and 15 deaths). There was also an outbreak of poisoning due to arsenic in beer in Liverpool in 1901: 6,000 cases and 70 deaths. The beer had been prepared by the fermentation of potato sugar that had been obtained from potato starch by hydrolysis with arsenic-containing sulphuric acid.

Neurologic Clinic Dedicated in Münster

In Münster (Westphalia), the psychiatric-neurologic clinic, erected during 1927-1931, was recently dedicated. Westphalia's university is thus enriched with a generously appointed institute that, from the standpoint of modern equipment, has scarcely its equal in Germany. The building and equipment cost nearly $500,000. The research laboratories are larger than one usually finds in the other large clinics of this specialty in Europe. The close connections between the two construction units, one of which is designed chiefly for the accommodation of neurologic patients, while the other serves mental patients, have taken far reaching account of modern demands for an "open" psychiatric clinic. The extensive arrangements for baths of all kinds, gymnastic exercise, roentgenology and neurosurgery, and the numerous research laboratories for histologic, psychologic, serologic-chemical, physical and genealogical investigations, enables one to carry out independently all forms of treatment and all types of research.

Death of Professor Schlossmann

Prof. Arthur Schlossmann, director of the children's clinic of the Medizinische Akademie in Düsseldorf, died, June 4, at the age of 65. Schlossmann performed an especially meritorious service by applying his great organizing ability to the development of pediatrics as a special branch of medicine and by the unquenchable optimism with which he supported the cause of pediatrics. In 1897, Schlossmann established in Dresden the first *kinderheilanstalt* (pediatric clinic). When he came to Düsseldorf, in 1906, he erected, in spite of the heavy child mortality of that period, as a motto over the entrance to the clinic the words *Hier wird nicht gestorben* (patients do not die here) and thus succeeded in gaining the confidence of the people. In collaboration with Professor v. Pfaundler, he published the "Handbook of Pediatrics." He also collaborated in the publication of the "Handbook of Social Hygiene." The organization of federal care of cripples and the law pertaining to midwives are, in their present legal form, partly his work. He was one of the principal organizers of the large exposition for health culture and physical education, held in Düsseldorf in 1926. His animated spirit, far reaching interest and enthusiasm made for him many friends, despite his sharp criticisms.

MOSCOW

(From Our Regular Correspondent)

June 3, 1932.

Transplantation of the Cornea

At a meeting of the Odessa Medical Society, April 20, Prof. W. P. Phylatov read a report about transplantation of the cornea as a method for combating blindness. In the Odessa Medical Institute clinic for eye diseases the partial transparent transplantation of the cornea was made on eighty-five eyes. Durable success of transparent adherence was obtained in twelve cases. In ten cases the vision improved. There was no improvement of vision in two cases. Eight patients were under supervision from one to six years, four from four to seven months. The operation was done in six cases because of a complete cecatrix. In the other cases there was an unchanging dimness after a superficial burn or parenchymatous keratitis. For this reason the speaker deems it necessary to register all the persons in the Soviet Union who have lost their sight from parenchymatous keratitis. Of the total number of blind persons (234,833, according to statistical data for 1931) nearly half are amenable to operation. For this purpose Professor Phylatov proposes to increase the number of patients in the eye clinics and to guarantee the necessary material for transplantation. For this purpose the eyes enucleated from patients, as well as those of people who die in hospitals, could be sent the clinics where these operations are performed. The reporter assumes that the eyes of corpses can be transplanted if promptly removed. They need not be used immediately if all conditions of asepsis, temperature and so on are observed. The objection of the relatives of the deceased is one of the chief obstacles. It must be removed by special legislation.

Professor Phylatov has introduced into the operation the following improvements: covering of the transplant by a conjunctival band and nourishment of the transplant by means of baths from embryo juice. Five patients with transplanted cornea were demonstrated at the meeting. After a lively exchange of opinions, the Odessa Medical Society approved all the chief points made in Professor Phylatov's paper.

Public Health in the Second Five Year Plan

The first five year plan will be finished for the most part in 1932, a year earlier than originally proposed. The government of the Soviet Union is working out a scheme for the second five year plan of public economics, industry and culture. Its principal aim is the formation of a socialistic society without classes in the Union of Socialist Soviet Republics. On the basis of the general increase of public incomes that are wholly used for the needs of the working masses, a sharp rise of their prosperity must be obtained. A complex scheme of health direction has been adopted, transforming labor into a source of physical and creative energy. It corresponds to measures used for progress in the allied field of public economics—communal housing, public nutrition, general education, and changing of the mode of living according to socialistic principles. Thus a social foundation for the future society without class distinctions is accomplished.

The following points are of a great significance in the hygienic supervision of labor: mechanization and electrification of industry on the basis of technical reconstruction, and the wide use of means of production in order to protect the health and strength of workers. Living conditions in cities will be made healthful with the view of turning the latter into mighty labor collectives. These healthful conditions include extension of water supplies and conduits, paving of streets and roads, prevention of noise and street accidents, increasing the number of trees and the amount of verdure in towns and industrial plants, and the abolishment of prostitution in all its varieties. In the socialistic town there will be no place for the development of rheumatism, tuberculosis, venereal diseases or epidemics. The public education of children from the earliest age and the augmentation of living space will help to develop a healthy generation. The difference between the town and the country will disappear. Agricultural labor will improve the health of peasants.

The Soviet farms, machine tractor stations and plants will receive the services of health centers, which will not only give medical and prophylactic aid but also superintend technological processes, creating healthful conditions for labor. Hospital assistance, including ambulances, consultations and polyclinics, as a means for preventing morbidity and invalidity, will embrace all the industrial proletariat and peasants.

The second five year plan of public health must completely abolish industrial accidents. There will be an end to most of the so-called social diseases—typhus fever, typhoid, remittent typhoid, variola, trachoma, malaria, scabies, favus and, partially, syphilis. A barrier will be placed against the dissemination of tuberculosis. Children's diseases will decrease. More nurseries for all children will be constructed. Women will stay before and after delivery in special houses for the mother and child. In the schools, athletics and gymnastics will play a large part in preparing a healthy generation. The leisure hours of industrial workers and peasants must not be spent in idleness and boredom but in conditions leading to further improvement of their mental and physical strength. The correct organization of leisure time in plants and in homes has great significance in raising the efficiency of labor. Out of town camps and parks for culture and rest, with active forms of amusement, must be widely spread. Travel, as a most effective dynamic form of rest, giving to the worker a knowledge of his own country, will take the place of houses of rest, existing at present. Physical culture, sports and athletics will be encouraged.

The medical staff will consist of the physician and the physicians' assistant. The latter will help in the prompt solution of problems of organization, and the physicians will be able to pass over to their assistants various small procedures which take at present much of the physician's time. The medical staff must be well acquainted with the technic and organization of the industries in the region where they work. Workers in their everyday activity will help to realize large health measures that are carried out now only by the medical staff.

An all-union conference on the questions of planning public health in the second five year plan is now being held in Moscow. A detailed report of it will be given later.

JAPAN

(From Our Regular Correspondent)

May 31, 1932.

Research on the Cause of Smallpox

Drs. T. Taniguchi, S. Hosokawa, S. Riku and Y. Komura of the Osaka Imperial University Medical Department have stated in various medical journals that they have found a micro-organism after ten years of study, which they venture to say is the causative agent of smallpox. In all vesicles studied from twenty-four smallpox cases in Osaka, among soldiers who came back from Shanghai, they found, in almost a pure culture, the same organism. They hold that this micro-organism differs from micro-organisms that have been claimed to be the cause of smallpox by other research workers and they have named it Jenneria "variolaen G. U. Sp.," after the name of William Jenner.

A Study of Criminal Abortion

Dr. R. Okamoto published his research on the methods of criminal abortion in Japan, which include the insertion of various objects into the vagina or cervix, massage, acupuncture in the abdominal portion of the uterus, and medicine taken internally. The majority of illegal abortions are committed by means of the insertion method. According to his investigation, of 320 cases, 285, or 89 per cent, were done that way. The kinds of objects inserted amounted to over sixty. Stalks of "butter-bur," a sweet coltsfoot, and acid solution are the most popular. Wooden or bamboo chopsticks come next. The objects inserted vary according to the locality, tradition or customs, but, on the whole, soft, springy substances are used so as to avoid injury. It is strange, he continues, that there were only 29 deaths caused by this illegal method out of 320 cases, or 9 per cent, of which the majority were due to puerperal fever. The period of delivery varied according to the month of pregnancy, age of the woman, number of pregnancies, physical condition and the means used, but the statistics show that a third of them aborted within two days, another third within one to three days, a half of the remainder within four days, and only a few within eight days or more.

The Science Institute at Shanghai

Since the outbreak of hostilities between Japanese and Chinese soldiers in February, the Institute of Science in the international city has been closed, and rumor had it that the institute would sooner or later be removed somewhere else in the near future. Dr. Yokote, the director, and all his assistants who had come back in Japan, are reported to have gone back again to Shanghai in order to reopen the institute, as peace is restored.

Isolation of Children Born of Lepers

In the Oshima Island Leper Sanatorium, under the management of several local governments, the children born of lepers are to be placed in isolation to determine whether this disease is transmitted from the parents or is caused only by contagion. The nurses are newly appointed, and this study of lepers' babies is being watched with keen interest.

Irregularities in the Admission of Medical Students

The entrance examination to any kind of medical college is characterized by the keenest competition. There are usually from six to ten times as many candidates as can be actually admitted. On the other hand, the nongovernmental medical colleges are compelled to face financial difficulties. The only way left to them is to collect contributions from the parents of the students. Surplus candidates and financial difficulty are easily associated in bringing about illegal admissions granted to the boys of wealthy families. Some parents of candidates voluntarily or involuntarily donate just before the entrance examination a sum of money amounting to from 200 to 1,000 yen as a contribution to the school fund. A rumor that the medical colleges are imposing unjust tests on other candidates made the educational department send inspectors to the colleges to examine closely the entrance examinations. They are reported to have read the examination papers, and audited the accounts, only to find some unreasonable selections and admissions. A sensation was created. The college directors, however, are of the opinion that without receiving contributions they are unable to maintain the colleges which are not assisted by the government. Whether the college authorities concerned are legally guilty or not is a matter yet to be determined.

Falling Off of Candidates for Higher Degrees

Graduates of universities generally have recently found it difficult to obtain positions in any line of business, but medical graduates hitherto never had been menaced by unemployment. This year, however, the graduates of the medical colleges barely found positions, which means it will be difficult for next year's graduates to find situations. Medicine for the last ten years was deemed the ideal profession for youth, and that brought about too many applicants for medical colleges. It is reported that applicants this year decreased by 30 per cent. The number of new graduates this year is 1,496, all told, both from government and from private universities, an increase of 213. Every year those graduates, on finishing the course, remain at school for a few years more without seeking positions out in the world, in the hope of obtaining the highest doctor's degree, which is conferred on presentation of a thesis. Without this honorable title few physicians have heretofore enjoyed prosperity, such being the custom and belief of the old and the new Japanese. Patients would pay much more to these practitioners. But owing to the depression, patients at present are inclined to avoid being examined by this kind of physician, who charge a much higher fee. A marked tendency is seen this year for the new graduates to seek positions or enter practice as soon as they graduate, considering it wiser to secure social footing earlier. This tendency naturally causes the shortage of positions as well as the lowering of the salary. Thus the golden age of Japanese physicians seems to be passing.

BUENOS AIRES

(From Our Regular Correspondent)

May 20, 1932.

A New Tax on Physicians

A new tax has been imposed on the medical profession, in addition to the revenue tax which physicians have paid for a long time and the annual payment of 100 pesos ($50) for their license. The imposition of this new tax has been received with an open manifestation of discontent. The amount to be paid is based on the monthly income of the physician, which is calculated as being three times as much as he pays for rent for the house in which he lives. A large number of physicians cannot afford to make this payment.

Reduction of Expenditures of the Faculties of Medicine

The government made great reductions in the expenses of the four schools of medicine of Argentina, as well as in all the ministries of the government in an attempt to balance the national budget. The Faculty of Buenos Aires has always received 3,000,000 pesos ($1,500,000) for its expenses, which also include the support of free dispensaries. At present 800 pesos ($400) was taken from the amount. The salaries of the members of the faculty are going to be cut down and the physicians are going to be charged with a new revenue tax. With the money that is collected in one form and economized in the other by the government, the budget will be balanced and the government will continue to make the payments of foreign debts, since Argentina is the only country in South America which is still making the payments on its debts.

Disturbances in Schools of Medicine

The medical courses at the Faculty of Buenos Aires began in May instead of in March as they were scheduled. A group of agitators, students who were in contact with politicians and had rather socialistic ideas, threatened to go on strike and they sent several committees to the minister of public education and to the president of the republic with complaints against the members of the faculty, whom they requested to resign. The faculty asked the government to prevent the thirty or more agitators from entering the school. The government placed at the disposal of the faculty a group of policemen for a period of one week. Every student who wished to enter was requested to present a certificate of identification. The strike failed. At present from 3,000 to 4,000 students are attending the school daily. In justice to the students, it must be stated that they themselves are attempting to preserve order.

At the University of Córdoba there is a strike of the students taking place. When the courses were opened, Professor Berman invited the labor union to send delegations to the classes in the school. Other members of the faculty refused to permit others besides students to attend their lectures. Then Professor Berman said that he would give his lecture elsewhere. At a conference of members of the faculty, Drs. Berman and Orgaz made some motions which were not approved by other members of the faculty and they were suspended from their positions as advisers and professors. The schools of La Plata and

Rosario are open and working without disturbances. However, in the school of Rosario a new board of directors is going to be nominated.

Hypophysis and Thyroid Gland

From studies made by Professor Houssay and his pupils on the relation between the hypophysis and the thyroid gland, the author reaches the conclusion that the secretion of the anterior lobe of the hypophysis is necessary for the normal development and maintainance of the structure and normal functions of the thyroid gland. Hypophysectomy produces the following changes in the thyroid gland of dogs: either hypoplasia or ponderal atrophy, marked flattening and atrophy of the thyroid cells and of their nuclei, absence of activity for thyroid secretion, presence of dense and nonvacuolated colloids and increase of the percentage of iodine content in the gland. During the first days after hypophysectomy, there is a transient hyperactivity of the thyroid gland. The content of iodine in the blood increases greatly during the first few weeks and it returns to normal between one and two months and then it continues either normal or subnormal. The injection of an extract from the anterior lobe of the hypophysis produces the following changes in the thyroid of dogs: first, transient diminution of the weight of the thyroid and, later, hypertrophy; histologic hyperactivity with reabsorption of the colloids, which become fluid and vacuolated and slightly stained; presence of cylindric and hypertrophied cells of double the normal size and in time production of epithelium with folds. The percentage of iodine in the thyroid gland diminishes, but the iodine content in the blood increases. The injection of extract from the anterior lobe of the hypophysis into guinea-pigs causes hypertrophy and hyperactivity of the thyroid gland. The injection of the same extract into rats is not followed by either ponderal hypertrophy or histologic reaction. The metabolism of normal dogs is increased by the administration of extract from the anterior lobe of the hypophysis by the peritoneal route. The action is observed also in dogs deprived of the thyroid gland, although not in the same degree of intensity as in normal dogs. The metabolism is as an average 15 per cent lower in dogs deprived of the hypophysis than in the control dogs. The metabolism of both dogs deprived of the thyroid gland and those deprived of the hypophysis is increased on administration of extract from the anterior lobe of the hypophysis.

Marriages

Thomas Marwil to Miss Josephine Jacobs, both of Detroit, July 7.

Samuel Roth to Miss Helen Spechler, both of New York, July 9.

Elmer B. M. Casey, to Miss Theresa Jean Migel, both of St. Louis, March 29.

Marco S. Petrone, Chicago, to Miss Jennie Mikulich of Aurora, Minn., July 6.

Joseph P. Franklin to Miss Jean Arendes, both of Cumberland, Md., at Baltimore, July 5.

Theodore Scharle, Jr., Dubuque, Iowa, to Miss Sarah McMillan of Burlington, May 11.

Homer King Vann, Leesburg, Fla., to Miss Mary Beall Bridges of Hancock, Md., July 2.

Walter Earl Barton, Elmhurst, Ill., to Miss Elsa Viola Benson of Orange, Mass., July 2.

Richard C. Dodson, Rising Sun, Md., to Miss Annie Caddall of Abingdon, Va., June 30.

Frank E. Boyd, Colfax, Iowa, to Mrs. Alice M. Little of Prairie City, in Omaha, Neb., May 18.

George Louis Le Fevre to Miss Catherine Margaret Brinen, both of Muskegon, Mich., July 13.

Glenn Raymond Johnson, Ottumwa, Iowa, to Miss Jewell Russell of Montezuma, Ga., at Oak Park, Ill., May 7.

Ralph Irving Alford, Belleville, N. J., to Miss Anne Louise Comins of Babylon, Long Island, N. Y., June 29.

Deaths

Albert Eugene Bulson ⊕ Vice Speaker of the House of Delegates of the American Medical Association, died at his home in Fort Wayne, Ind., July 17, of carcinoma. Dr. Bulson was born in Chicago in 1867 and graduated from the Michigan State College in 1888 and Rush Medical College in 1891. He served his internship in the hospital of the University of Michigan and thereafter studied abroad. He was professor of otolaryngology in the Fort Wayne Medical College from 1892 to 1908 and since that time has been professor of ophthalmology in the Indiana University School of Medicine. He was also ophthalmologist to several hospitals. Dr. Bulson was a member of the American Academy of Ophthalmology and Otolaryngology, of the American Ophthalmological Society and of the American Board for Ophthalmological Examinations. He contributed largely to the literature of his specialty, was a collaborator in the Encyclopedia of Ophthalmology and, for twenty-two years, was editor of the *Journal of the Indiana State Medical Association.* In his editorship he was original, vigorous and an ardent supporter of the work of the Council on Pharmacy and Chemistry of the American Medical Association. In the American Medical Association he served as a member of the House of Delegates from 1916 through 1931 and was repeatedly member or chairman of important reference committees. In 1929 he was elected Vice Speaker of the House of Delegates and was reelected annually thereafter. In the Section on Ophthalmology he was secretary from 1903 to 1909, chairman during 1910 and 1911, and again secretary from 1918 to 1919. His death removes from the work and the service of the Association a loyal and valued member.

Charles Daniel Lockwood ⊕ Pasadena, Calif.; Northwestern University Medical School, Chicago, 1896; assistant in surgery at his alma mater, 1898-1900; professor of oral surgery, College of Dentistry, University of Southern California, 1900-1915; member of the Western Surgical Association and the American Association for Thoracic Surgery; member and first president of the Pacific Coast Surgical Association; fellow of the American College of Surgeons; served during the World War; on the staffs of the Pasadena Hospital, Olive View (Calif.) Sanatorium and the Los Angeles General Hospital; aged 64; died, in June, of erysipelas.

Hiram W. Austin ⊕ Senior Surgeon, U. S. Public Health Service, retired, Washington, D. C.; University of Michigan Medical School, Ann Arbor, 1875; fellow of the American College of Surgeons; delegate to International Medical congresses at Rome in 1894 and Lisbon in 1906; formerly assistant to the surgeon general and chief of the division of foreign and domestic quarantine bureau, U. S. Public Health Service; was made surgeon in the U. S. Public Health Service in 1880, senior surgeon in 1912 and retired in 1921; aged 82; died, June 20.

George McCallum Niles ⊕ Atlanta, Ga.; Bellevue Hospital Medical College, New York, 1886; at one time professor of gastro-enterology and clinical medicine, Atlanta Medical College; past president of the Chattahoochee Valley Medical Association; aged 67; author of "Pellagra, an American Problem," and "Diagnosis and Treatment of Digestive Diseases"; formerly on the staff of the Crawford W. Long Memorial Hospital, where he died, June 5, of cerebral hemorrhage and diabetes mellitus.

Archibald Wiese ⊕ Pittsburgh; Johns Hopkins University School of Medicine, Baltimore, 1920; instructor in surgery, University of Pittsburgh School of Medicine; fellow of the American College of Surgeons; member of the surgical staff of the Pittsburgh Free Dispensary; aged 38; member of the associate surgical staff of the Presbyterian Hospital, where he died, June 25, of perforated gastric ulcer.

Ulysses Grant Windell, Chicago; College of Physicians and Surgeons, Chicago, 1894; member of the Illinois State Medical Society; served during the World War; at one time medical inspector for the city board of health; formerly on the staff of the West Suburban Hospital, Oak Park, Ill.; aged 65; died, June 9, in the Edward Hines, Jr., Hospital, Hines, Ill., of bronchopneumonia.

Max Riebenack Stockton ⊕ Major, M. C., U. S. Army, San Francisco; Hahnemann Medical College of Philadelphia, 1915; fellow of the American College of Surgeons; served during the World War; appointed first lieutenant, M. C., U. S. Army, in 1917 and was promoted major in 1918; stationed at the Letterman General Hospital; aged 40; died, June 17.

Frederick W. Mann ⊕ Houlton, Maine; College of Physicians and Surgeons, Baltimore, 1892; University of Bishop College Faculty of Medicine, Montreal, Que., 1900; past president of the Maine Medical Association; fellow of the American College of Physicians; on the staff of the Aroostook Hospital; aged 65; died, June 16.

George H. Widder, Harrisburg, Pa.; Jefferson Medical College of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; for many years president of the city board of health; on the staff of the Harrisburg Polyclinic Hospital; aged 65; died, June 6, in the Johns Hopkins Hospital, Baltimore.

James Wilson McMurray, Marion, Ohio; Starling Medical College, Columbus, 1897; member of the Ohio State Medical Association and the Radiological Society of North America; served during the World War; formerly on the staff of the Marion City Hospital; aged 64; died, June 26, of chronic nephritis.

Frank Percival Williams ⊕ Boston; Harvard University Medical School, Boston, 1895; formerly associate professor of surgery, Tufts College Medical School; served during the World War; for many years on the staff of the Boston Dispensary; aged 62; died, June 18, at Marblehead Neck, Mass.

Leonard F. C. Wendt ⊕ Detroit; Detroit Homeopathic College, 1902; fellow of the American College of Physicians; formerly associate professor of medicine, Detroit College of Medicine and Surgery; on the staff of the Grace Hospital; aged 57; died suddenly, June 11, of coronary thrombosis.

Everett L. Sullivan ⊕ Poughkeepsie, Ark.; Hospital Medical College, Atlanta, Ga., 1909; Eclectic Medical University, Kansas City, Mo., 1915; Kansas City College of Medicine and Surgery, 1917; veteran of the Spanish-American War; aged 51; died suddenly, June 11, of cerebral hemorrhage.

Charles Randolph Hunter, Sandy Hook, Ky.; University of Louisville School of Medicine, 1917; member of the Kentucky State Medical Association; served during the World War; director of the health department of Elliott County; formerly coroner of Boyd County; aged 40; died, June 3.

Charles Leonard Mosher, Chatham, N. Y.; Cleveland University of Medicine and Surgery, 1895; member of the Medical Society of the State of New York; for many years member of the board of education of Chatham; aged 71; died, June 10, of lobar pneumonia and meningitis.

Theodore Irving Townsend ⊕ Binghamton, N. Y.; College of Physicians and Surgeons in the City of New York, 1891; member of the American Psychiatric Association; served during the World War; aged 62; died, June 22, in the Binghamton City Hospital, of myocarditis.

Andrew Webster Van Slyke, Coxsackie, N. Y.; Albany Medical College, 1869; member of the Medical Society of the State of New York; health officer; for many years member of the state board of health; aged 85; died, June 15, of heart disease and pneumonia.

Griffith Scholl Lawall ⊕ Allentown, Pa.; Maryland Medical College, Baltimore, 1912; fellow of the American College of Surgeons; secretary of the Lehigh County Medical Society; on the staff of the Sacred Heart Hospital; aged 45; died, June 25.

Richard John Morrisey, Pierre, S. D.; Barnes Medical College, St. Louis, 1908; member of the South Dakota State Medical Association; aged 47; formerly on the staff of St. Mary's Hospital, where he died, June 3, of streptococcus septicemia.

Frederick Earle Watts, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1904; served with the Canadian Army Medical Corps during the World War; aged 51; on the staff of the Christie Street Hospital, where he died, April 12.

Jesse Albert Martin, Indianapolis; Indiana University School of Medicine, Indianapolis, 1924; member of the Indiana State Medical Association; aged 34; assistant superintendent of the Indianapolis City Hospital, where he died, June 25.

Franklin Welles, Boston; College of Physicians and Surgeons, Boston, 1907; aged 65; died, May 18, in the Lawrence Memorial Hospital, Medford, Mass., following an operation for prostatic obstruction, and cardiovascular renal disease.

Abraham Lande ⊕ Elmira, N. Y.; University of Buffalo School of Medicine, 1905; served during the World War; on the staffs of the Arnot-Ogden Hospital and St. Joseph's Hospital; aged 50; died, June 20, of angina pectoris.

William T. Warriner, Crewe, Va.; College of Physicians and Surgeons, Baltimore, 1871; member of the Medical Society of Virginia; Confederate veteran; aged 88; died, June 5, in Richmond, of chronic nephritis and myocarditis.

Thomas Robert Francis ⊕ Connellsville, Pa.; College of Physicians and Surgeons, Baltimore, 1908; member and for many years president of the board of health; on the staff of the State Hospital; aged 51; died, June 13.

Carrel A. Wilson, Marble Rock, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1901; member of the Iowa State Medical Society; aged 54; died, June 3, in the Cedar Valley Hospital, Charles City.

John Leshure ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1898; on the staff of the Lutheran Hospital; aged 62; died suddenly, June 10, at his summer home in Westport, Conn.

James Patrick Fleming ⊕ Rochester, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1898; formerly on the staff of St. Mary's Hospital; aged 63; died, June 18, of heart disease and diabetes mellitus.

Clifford Parker Holt, Cambridge, Mass.; University of Vermont College of Medicine, Burlington, 1901; aged 52; died, May 28, in the Massachusetts General Hospital, Boston, of coronary sclerosis and thrombosis.

Edward Merritt Sherman, Pasadena, Calif.; Hahnemann Medical College and Hospital, Chicago, 1895; Denver College of Medicine, 1899; member of the Colorado State Medical Society; aged 66; died, June 15.

George Thomas Drennan, Pondcreek, Okla.; Medical Department, University of Tennessee, Nashville, 1899; member of the Oklahoma State Medical Association; aged 55; died, May 21, of coronary thrombosis.

Richard Hinchey ⊕ Waltham, Mass.; Harvard University Medical School, Boston, 1898; served during the World War; on the staff of the Waltham Hospital; aged 61; died suddenly, June 20, of heart disease.

Joseph L. Rose, Jellico, Tenn.; Hospital College of Medicine, Louisville, Ky., 1879; member of the Tennessee State Medical Association; aged 78; died, June 14, of uremia following a prostatectomy.

Thomas Jackson Sims, Newport News, Va.; Medical College of Virginia, Richmond, 1897; member of the Medical Society of Virginia; aged 69; died, June 9, in the Riverside Hospital, of carcinoma.

George S. Gfroerer ⊕ Oak Park, Ill.; College of Physicians and Surgeons, Chicago, 1885; aged 73; died, July 5, in the Oak Park Hospital, of carcinoma of the stomach and chronic myocarditis.

James Allen Prichard, Buchanan, Ky.; Kentucky School of Medicine, Louisville, 1892; member of the Kentucky State Medical Association; aged 64; died, June 10, of hypertension and acute nephritis.

Harry Ward Hall, Fairfax, Wash.; Dartmouth Medical School, Hanover, N. H., 1890; member of the Washington State Medical Association; aged 67; died, May 19, of heart disease and asthma.

Harry Clinton Holmes, Boston; Tufts College Medical School, Boston, 1896; Harvard University Medical School, Boston, 1899; aged 73; died, June 6, of chronic myocarditis and arteriosclerosis.

Wellington Campbell, Short Hills, N. J.; College of Physicians and Surgeons in the City of New York, 1877; aged 79; died, June 17, in the Orange (N. J.) Memorial Hospital, of pneumonia.

Thomas Joseph O'Hara, London, Ont., Canada; University of Western Ontario Medical School, London, 1929; on the staff of the Queen Alexandra Sanatorium; aged 29; died, April 23.

Frederick Joseph Driver ⊕ Macedonia, Iowa; Omaha Medical College, 1895; aged 62; died, June 6, at the University Hospital, Iowa City, of injuries received in an automobile accident.

Clark Truman Elder, Cleveland; Ohio Medical University, Columbus, 1903; member of the American Psychiatric Association; veteran of the Spanish-American War; aged 55; died, June 2.

Charles S. Dickson, Riverside, Calif.; Chicago Medical College, 1877; member of the California Medical Association; for thirty-two years county coroner; aged 83; died in May.

Robert N. Whitehead, Fulton, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1885; aged 71; died, June 10, of Parkinson's disease and pernicious anemia.

Herbert E. Colby ⊕ La Junta, Colo.; National Medical College, Chicago, 1898; on the staff of the Mennonite Hospital; aged 63; died, June 9, of streptococcic cellulitis.

Isaac N. Bowman, Upper Sandusky, Ohio; Starling Medical College, Columbus, 1882; member of the Ohio State Medical Association; aged 77; died, June 2.

Donald McKay, Flatonia, Texas; Detroit College of Medicine, 1892; member of the State Medical Association of Texas; aged 66; died, June 20, of angina pectoris.

Wilmer Cortez Box, Graceville, Fla.; Atlanta College of Physicians and Surgeons, 1907; member of the Florida Medical Association; aged 48; died, June 12.

Samuel B. Medford, Clyde, N. C.; University of Nashville (Tenn.) Medical Department, 1896; aged 68; was killed, June 4, in an automobile accident.

James Walter Andrist, San Diego, Calif.; Rush Medical College, Chicago, 1900; fellow of the American College of Surgeons; aged 57; died, May 21.

James McMun Stewart, Fremont, Ohio; Bellevue Hospital Medical College, New York, 1869; Civil War veteran; aged 90; died, June 9, of pneumonia.

Edward Lucius Finch, Plainfield, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1909; aged 87; died, June 8, of arteriosclerosis.

Harry Bauguess ⊕ Detroit; Omaha Medical College, 1899; on the staff of St. Joseph's Mercy Hospital; aged 59; died, June 3, of duodenal ulcer.

Amos Wyatt Hoff, Des Moines, Iowa; Medical Department of Drake University, Des Moines, 1889; aged 77; died, June 3, in Casper, Wyo.

Glendon L. Thomas, Philadelphia; Jefferson Medical College of Philadelphia, 1869; aged 89; died, June 6, in Frankford, Pa., of heart disease.

Louis Barth ⊕ Grand Rapids, Mich.; University of Wurzburg, Germany, 1881; aged 74; died, June 7, in the Blodgett Memorial Hospital.

Philip Fox ⊕ Madison, Wis.; Bellevue Hospital Medical College, New York, 1863; Civil War veteran; aged 92; died, June 24, of uremia.

Christian Neils Gundesen, Calgary, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1923; aged 33; died, April 20.

Samuel Le Roy Ridge ⊕ Langhorne, Pa.; Jefferson Medical College of Philadelphia, 1907; aged 46; died, June 24, of chronic nephritis.

William M. Morton, Pasadena, Calif.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1881; aged 80, died, June 1.

Albert M. Benson, Hartford, Wis.; Hahnemann Medical College and Hospital, Chicago, 1881; aged 76; died, June 9, of arteriosclerosis.

William A. Drane, Buena Vista, Ga.; University of Georgia Medical Department, Augusta, 1886; aged 71; died, June 6, of typhoid fever.

Anthony Frederick Zahn, Brooklyn; Bellevue Hospital Medical College, New York, 1887; aged 68; died, June 12, of heart disease.

Florence Belle Wyant Matta, Brownsville, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1903; aged 55; died, April 1.

Isaac S. Louis ⊕ Chicago; Northwestern University Medical School, Chicago, 1900; aged 55; died, June 28, of cerebral hemorrhage.

Ira S. J. Crumrine, Marion, Ind.; Medical College of Indiana, Indianapolis, 1894; aged 72; died, June 18, of acute myocarditis.

William Francis Fluhrer, Mountain Dale, N. Y.; Bellevue Hospital Medical College, New York, 1870; aged 85; died, May 21.

William H. Dewey ⊕ Moville, Iowa; State University of Iowa College of Medicine, Iowa City, 1884; aged 76; died, May 18.

Alex S. Cooper, Powelton, Ga.; University of Georgia Medical Department, Augusta, 1880; aged 78; died, April 22.

John A. Tipton ⊕ Hillsville, Va.; Bellevue Hospital Medical College, New York, 1879; aged 75; died, April 23.

Thomas Andrew Wallace, Clayton, Ill.; National Medical University, Chicago, 1899; aged 70; died, April 30.

Harry Partridge, San Francisco; Cooper Medical College, San Francisco, 1895; aged 58; died, April 24.

Joseph Sykora, Cleveland; Cleveland Medical College, 1875; aged 78; died, June 8, of a brain cyst.

John Melvin Wallace, Lansdowne, Pa.; Cleveland Medical College, 1892; aged 67; died, May 5.

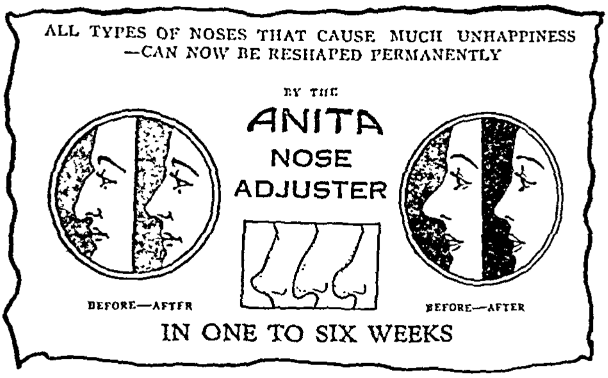
Bureau of Investigation

THE ANITA NOSE ADJUSTER AND DR. JOSEPHS NOSE CORRECTOR

The Post Office Fraud Order Against These Concerns Has Been Revoked

In this department of The Journal, March 26, 1932, there was published the case of the Post Office Department against the Anita Institute, Inc., of Newark, N. J., and Dr. Josephs, Inc., of East Orange, N. J. These were two concerns run by Mrs. Anna D. Rostow, who was president, treasurer and principal owner of both. Under these trade names, Mrs. Rostow sold devices for which it was claimed, either directly or by implication, that the shape of an adult nose could be changed by wearing such devices. It was also brought out at hearing that while in the Anita Institute advertising it was guaranteed to refund money if, after thirty-days' use, the purchaser had not benefited by the use of the device, the government declared that it was the consistent policy of the promoters to avoid living up to that promise whenever possible. Because of the fraudulent nature of the business, the Post Office Department closed the mails to both concerns on February 17, 1932.

After the issuance of the fraud order, Mrs. Rostow made application to the Post Office for its revocation. The grounds for her request were that in addition to selling the Anita Nose Adjuster and the Dr. Josephs Nose Corrector to laymen, under the implied claim that the devices would change a snub nose into a Grecian, or a negro's nose into a Caucasian, she also sold the devices to physicians and surgeons for use by them as splints following nasal operations. Her plea was that this part of the business was legitimate and as the enforcement of the fraud order would destroy that part of the business, she asked that the order be revoked. In applying for the revocation of the fraud order, Mrs. Rostow executed an affidavit from which the following paragraphs are quoted:


ALL TYPES OF NOSES THAT CAUSE MUCH UNHAPPINESS
—CAN NOW BE RESHAPED PERMANENTLY
BY THE
ANITA
NOSE
ADJUSTER
BEFORE—AFTER
BEFORE—AFTER
IN ONE TO SIX WEEKS

Typical advertisement of the Anita Nose Adjuster used prior to the issuance of the fraud order.

> "That affiant [Mrs. Anna D. Rostow] hereby accepts the finding of the said Solicitor and hereby stipulates that the said devices will not hereafter be sold through the mails (directly or indirectly) to lay users; . . ."
>
> "Affiant hereby stipulates on behalf of herself, as principal owner, and on behalf of said Anita Institute, Inc., and Dr. Josephs, Inc., that in the event said fraud order of February 17, 1932, is revoked, the aforesaid devices will not hereafter be sold through the mails to lay users and the scheme covered by said fraud order as fully described in the memorandum of the Solicitor dated February 15, 1932, attached to said fraud order, will not be resumed either under the names covered by said fraud order or by any other name or names whatsoever;
>
> "That in the event there should come to the Post Office Department evidence showing that said scheme has been resumed under said names or under any other names, a fraud order may be issued forthwith by the Post Office Department against the names then employed without further notice to affiant, said corporations, their successors or assigns;
>
> "Affiant hereby further stimuplates that all orders hereafter received from lay persons for said devices will be returned with

the simple statement that the enterprise has been abandoned and that the sale of the devices has been discontinued;

"Affiant further stipulates that she will not hereafter cash any money orders from lay users drawn in favor of any of the names mentioned in said fraud order of February 17, 1932, which were received by the concerns and parties covered by said fraud order prior to the enforcement of said fraud order;

"Affiant understands that in the event this affidavit is accepted by the Post Office Department as a basis for revocation of the fraud order of February 17, 1932, such acceptance will be predicated solely upon assurance of the affiant herein that the scheme covered by the said fraud order has been absolutely discontinued and abandoned, and will not be resumed in future, and that such acceptance will not constitute either directly or indirectly an approval of the sale through the mails of the said devices to physicians, said business not having been involved in said fraud order proceeding, the details of which have not been before the Post Office Department. . . ."

Judge Horace J. Donnelly, Solicitor for the Post Office Department, in a memorandum to the Postmaster General, stated that as the fraudulent scheme against which the fraud order was made had been effectively stopped and it was believed that Mrs. Rostow and her associates would live up to the letter and spirit of the affidavit, he recommended that the fraud order be revoked with the understanding that it would be reissued in the event the terms of the affidavit were violated. It was revoked April 29, 1932.

Correspondence

MORTALITY FROM TRIBROM-ETHANOL ANESTHESIA

To the Editor:—In the Madrid letters (The Journal, June 25, p. 2303) Dr. Robert Monod of Paris is reported to have said, at the International Congress of Surgery held in Madrid, that "Lundy believes that the mortality rate from tribrom-ethanol anesthesia is 3 per thousand." This statement is incorrect. In my article "The General Anesthetic Tribromethyl Alcohol: Review of the Literature on Its Rectal and Intravenous Use," I stated that "the risk of death that is intrinsic in the anesthetic is probably about 3:10,000."

I do not know whether Dr. Monod or the correspondent is responsible for this misstatement. In the transactions of the Congress as published in the *Presse médicale* there is no mention of the mortality due to tribrom-ethyl alcohol ("Avertin").

John S. Lundy, M.D., Rochester, Minn.

PAROTITIS AND MUMPS

To the Editor:—The confusion existing today in medical thought regarding secondary parotitis and "mumps" (epidemic parotitis) is persistent. Unusual and rare cases of "mumps" are reported, when in reality the cases should be diagnosed as secondary parotitis, whether postoperatively or due to a secondary infection by way of Stensen's ducts. We have demonstrated this in a recent contribution (*Tr. Sect. Obst., Gynec. & Abd. Surg.* A. M. A., 1927, p. 49). Dr. Bader reports a case of acute suppurative parotitis occurring as a complication to mumps (The Journal, Sept. 26, 1931). The case reported was that of a child, aged 3 years, who had an acute purulent otitis media of the right ear. After myringotomy of the right ear it drained profusely of a thin green yellow pus. No culture was taken; if it had been taken, the organisms found in the otitis media suppuration would have been similar to those present in the suppurating parotitis. Ten days following the myringotomy, swelling occurred at the angle of the left jaw. The history of the child being exposed to mumps is coincidental. What actually occurred, as I have previously shown, is that the mouth was invaded with bacteria from the original right-sided otitis media. The organisms ascended the left Stensen duct, with the consequent secondary suppurating parotitis. This suggests itself more clearly when the primary presence of a temperature of 103 F. is noted, with attending insalivation and dry mouth. The case here presented is a left-sided postoperative parotitis following myringotomy for a right-sided otitis media. It is not uncommon to mistake the swelling of the parotid gland for that of mumps or epidemic parotitis. The differentiation should be made to institute proper treatment. Secondary parotitis more often results in suppuration. Oral hygiene and salivary stimulation are paramount in the prevention of this condition. Every surgical operation should be preceded by careful investigation and prophylaxis of the oral cavity.

Louis Antupit, M.D., Hartford, Conn.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

IODINE IN GOITER

To the Editor:—It seems that there is more confusion than ever regarding the use and the dangers of iodine in relation to the thyroid gland. For instance, Hyman and Kessel (The Journal, June 13, 1931, p. 2014) use large doses of iodide in simple goiter, in autonomic imbalance (certainly in many instances a pre-Basedow condition), and in exophthalmic goiter. It appears that iodides are given as a routine in all these conditions, including exophthalmic goiter, even when no immediate operation is planned. They recognize no contraindications for the use of iodides, and the morphology of the gland (adenoma) in no way modifies the treatment. From their article it seems that a strict differential diagnosis between autonomic imbalance and mild thyrotoxicosis is not absolutely necessary, for the treatment of both conditions is with iodide. On the other hand, R. Schmidt (*München. med. Wchnschr.* **78**:989 [June 12] 1931) states emphatically that iodine is one of the most dangerous of drugs. By its use, simple harmless strumas are often converted into serious toxic conditions. D. Jahn (*München. med. Wchnschr.* **78**:744 [May 1] 1931) uses iodine only prior to operations as advised by Plummer. He considers iodine so dangerous that he warns against its use in arteriosclerosis and hypertension. Hypertension is often merely an early sign of thyrotoxicosis, and iodides merely intensify the condition. I know of no more pressing problem in therapeutics than this question. It is to be hoped that the contentions of Hyman and Kessel are correct in regard to the relative harmlessness of iodine. There are many patients with mild thyrotoxicosis in whom operation does not appear necessary. Are these patients to be given iodine in the effort to bring about an iodine remission, or is iodine to be avoided as a deadly poison? Does iodine in simple goiter offer a means of bringing about involution, or does it incur a grave risk of converting a harmless local condition into a serious general disease? Kindly omit name.

M.D., Alabama.

Answer.—Knowledge as to the functions of the ductless glands is in process of development and at present is incomplete and fragmentary. More is probably known of the thyroid than of other glands, but even in the case of this gland much desired information is lacking. This is particularly true in regard to the relation of thyroid activity to psychic states, to the autonomic nervous system, and to its activity in coordination with other ductless glands. The activity of the thyroid is probably of great importance in functional disturbances, the manifestations of which are constantly observed in the general practice of medicine. In addition, the thyroid undoubtedly is a factor in certain organic diseases, including cerebral, cardiovascular and gastro-intestinal disturbances. The physician is frequently at a loss to interpret all such phenomena or judge as to what part, if any, the thyroid may play under such circumstances. In the present state of our knowledge, final judgment concerning such matters must be withheld.

In evaluating the effect of therapeutic measures in the control of such clinical disturbances, a definite conception as to all factors involved must be at hand. Obviously where so many uncontrolled factors are present, as in all the groups enumerated, even greater care in the evaluation of any form of treatment should be exercised. In this field, as in no other at the present time, well known facts should be clung to; otherwise, only greater confusion than already exists will result.

In the question asked, the confusion referred to applies to the conception of the disease process. In the articles mentioned, no clear-cut distinction is made between diseases that are predominantly associated with pathologic changes in the thyroid and are controlled by therapeutic measures directed at the thyroid gland, itself, and many other diseases in which thyroid activity and symptoms are observed but are probably only associated phenomena.

Thyroid work in the Mississippi Valley and Great Lakes region leads to the belief that iodine causes no harm and greatly relieves many manifestations of hyperthyroidism, certainly as seen in the three typical clinical groups associated with pathologic changes in the thyroid gland, namely, simple, adenomatous and hyperplastic goiter, and in the intermediate and atypical cases which fall in between these classic clinical types.

Iodine is not to be considered a cure for simple goiter; rather it has been demonstrated to be an efficient preventive. Iodine is not a cure for either adenomatous or hyperplastic goiter, yet it serves a practical purpose in materially reducing the severity of the manifestations of hyperthyroidism in many but not in all cases.

The use of iodine in other conditions superficially resembling hyperthyroidism, as in autonomic unbalance, psychic states and neuroses, and in hypertension and arteriosclerosis, is believed harmless even if of little benefit. The use of iodine in simple goiter is of decided benefit in many patients. Ill effects are rare if, indeed, they occur at all. Practically under no conditions is its use to be feared.

SUCCUS CINERARIA MARITIMA IN CATARACT

To the Editor:—Please let me know whether there has been demonstrated any value in the use of cineraria maritima for cataract.

M.D., *South Carolina.*

Answer.—Probably the best answer ever given to the question propounded was presented by the exploiters of Succus Cineraria Maritima, the Walker Pharmacal Company, when that company was given the opportunity of proving to the satisfaction of the federal courts that their preparation was a remedy for cataract. The federal food and drugs officials proceeded against the Walker Pharmacal Company, charging that Succus Cineraria Maritima was misbranded. The government chemists reported that the stuff was essentially a solution of boric acid and vegetable drug extractives in water and glycerin. The government charged that the claims that Succus Cineraria Maritima was a remedy for cataract and other opacities of the eye were "false and fraudulent," and "applied knowingly and in reckless and wanton disregard of their truth or falsity." Did the Walker Pharmacal Company attempt to defend in court the claims that it had made for years and is still making? It did not! In February, 1916, it pleaded guilty and was fined. The company has, of course, learned its lesson and no longer makes such claims on the trade package, which, unfortunately, is the only thing that the federal Food and Drugs Act can control. The claims are still made, however, in those other avenues of publicity that are not subject to the federal Food and Drugs Act. As long ago as 1911, the Council on Pharmacy and Chemistry reported on the utter worthlessness of Succus Cineraria Maritima as a cure for cataract.

WASSERMANN REACTION IN SYPHILIS AS A GUIDE TO INFECTIOUSNESS

To the Editor:—What danger is there to occupants of a home when they employ a Negro maid whose Wassermann reaction is three plus? How can you explain two cases in which the woman has a three plus Wassermann reaction and her husband's recation is negative? In her first marriage she was pregnant on two occasions but not in the second and present marriage, which is of fifteen years' standing. Is there such a thing as natural immunity against syphilis, so that a patient with constant close contact, as in married life, can still be exposed and not contract the disease? Is the Wassermann test, therefore, to be trusted or is the foregoing possible?

Nathan Steinberg, M.D., Philadelphia.

Answer.—Questions of the type here asked are based on a prevalent misconception among physicians to the effect that serologic tests, whether positive or negative, have a necessary connection with the infectiousness or noninfectiousness of an individual and are of a distinctive value as guides. For example, the danger of the Negro maid to the personnel of the household is not dependent on her positive Wassermann reaction but on the stage and character of her syphilitic infection. Similarly, a woman might have a three plus Wassermann reaction for the larger part of her life and be quite incapable of transmitting the disease to her husband, no matter how intimate the contact. Syphilis tends, though not with absolute infallibility, to run a chronological course with reference to infectiousness, the disease being most easily transmissible during the first two years, which is the period of active cutaneous and mucosal lesions and of mucocutaneous relapse. It is the exception for infectiousness to persist longer than five years after the onset of the disease, though instances have been reported. The serologic tests have relatively little to do with the matter except as they tend to be positive on the appearance of infectious lesions. The test, however, may be positive indefinitely after all signs of infectiousness have disappeared and a test may be negative in the presence of active mucous lesions, transmission of the disease through the semen, and transmission through the blood, as in the infection of the fetus. The issue of infectiousness in both these cases, therefore, depends not on the serologic tests of the maid or the wife but on the status of their infections with reference to the principles mentioned. In all probability, the wife in her second marriage had an infection too old to be any longer transmissible, even though her blood test remained positive.

The question of the existence of a natural immunity against syphilis in man is as yet undetermined. There are a few examples in which repeated exposure to infectious lesions seems to have taken place without the transmission of the disease, and there is no question that this must be a not uncommon occurrence, particularly in intercourse with prostitutes. On the other hand, the factors entering into the transmission or nontransmission of the infection under these circumstances, to say nothing of the possibility of the transmission of a completely asymptomatic infection, making the exposed person a carrier without external manifestations, are too complex for general statements in regard to immunity.

The final question must be answered in the negative. The serologic tests, whether positive or negative, have little to do with the question of infectiousness. They may be positive in the presence or in the total absence of clinical infectiousness, and they may be negative and the patient yet be quite capable of transmitting the disease.

INJECTION METHOD IN VARICOSE VEINS OF ABDOMEN

To the Editor:—I have a patient who had varicose veins of each leg and also large varicose veins of the abdomen. I have by the injection method treated and cured the veins of the leg but have been afraid to inject the veins of the abdomen. Please inform me whether there is any contraindication to the injection of these veins, for I would like to cure these since they are causing a great deal of pain and some eczema in the groins.

A. L. Graff, M.D., Cedar City, Utah.

Answer.—large varicose veins on the abdomen must be the result of an occlusion in the external iliac veins or even the vena cava. A history of edema of the lower extremities, following an operation, childbirth or infectious disease, should be searched for. Next, signs of patency in the deep veins should be elicited. If the obliteration of the veins of the leg has not produced or increased an edema, it may be safely assumed that the deep venous obstruction has been overcome either by recanalization or by the formation of deep collaterals. Even more important is the question whether an old infectious thrombophlebitis in the deep veins may not be activated by an injection of the superficial abdominal veins. Thus patients who have had a deep thrombophlebitis following typhoid may show a renewed flare up following injection or even slight trauma to a superficial vein. If the mechanical obstruction in the deep veins has been overcome and if a latent infection can be ruled out, an injection of these new collaterals might be attempted. The decision, however, in the individual case should not be attempted except by men of more than the average experience in the treatment of varicose veins, as the danger of producing an infected thrombus in the veins without valves, close to the vena cava, is not to be compared with that of producing a solid aseptic clot in the dilated saphenous vein.

STRAMONIUM IN ASTHMA

To the Editor:—I have a patient with bronchial asthma, a man, aged 58, for whom I prescribed jimson weed seed (stramonium) to be smoked in a pipe for relief. It usually gives relief in about five minutes. He has used it from one to six times each twenty-four hours for the past year. I want to know whether its continuous use would be injurious. I have tried epinephrine, ephedrine and ephedrine-amytal without relief. His heart is of normal size but there is a distinct mitral murmur. The blood pressure is 100 systolic and 60 diastolic. The heart was roentgenographed. Please omit name.

M.D., Arkansas.

Answer.—Stramonium U. S. P. or Stramonii Folia, B. P., is official in the form of the leaves and is also known as Jamestown weed, or Datura stramonium. It contains an alkaloid, hyoscyamine, physiologically identical with atrophine. Stramonium leaf is the main constituent of most asthma powders and cigarets and is usually mixed with saltpeter to aid in its combustion. Lobelia and other ingredients are sometimes added and some proprietary remedies also contain cocaine, to the ultimate detriment of their users.

Stramonium, like belladonna, acts supposedly by alleviating bronchial spasm. Particles of the burned powder may be found in the Curschmann spirals excreted with the sputum. There is no doubt of the efficiency of stramonium in relieving many mild attacks, but in severe seizures it is usually unsuccessful. The great objection to its regular use lies in the fact that the temporary relief is gained to the detriment of the bronchial mucosa, which is irritated and tends to become chronically congested: Hurst (*Brit. M. J.* **2**:839 [Nov. 9] 1929) pointed out that the users of proprietary powders suffer from a rapid increase in the frequency of their attacks. However, this does not always obtain and many sufferers seem to be able to smoke the powder for many years without apparent damage. There is probably no great harm in its indefinite use outside of its irritating effect to many. Like atropine, it is rapidly eliminated from the body, so that instances of poisoning are rare.

It might be well to suggest—if not already carried out—thorough examination of the patient, with complete protein sensitization tests. This procedure might obviate the necessity for the use of stramonium.

POSSIBLE POISONING FROM LEMONADE IN ENAMEL UTENSIL

To the Editor:—A patient of mine had grip and his wife made some lemonade in a gray agate pot and let it stand over night. The first drink immediately caused no effects but when the patient requested more the next morning the lemonade was reheated in the same pot. Within an hour the man was seized with severe abdominal cramps, nausea and diarrhea. Several hours later the same thing happened, reheating of the liquid and reappearance of the same symptoms, only more exaggerated. The agate container showed a distinct liquid level line darker gray and felt rough like fine sandpaper instead of smooth as the rest of the agate. Please inform me what chemical substance was formed and what the proper treatment should have been.

George H. Jantzen, M.D., Queens Village, L. I.

Answer.—It seems reasonable to suppose that some metal substance in the glaze of the container was dissolved out by the citric acid of the lemonade and caused the illness, but from the facts as given it is impossible to say what the substance may have been. Lead is not a usual constituent of the enamel used in the United States. Zinc dissolved from "galvanized iron" containers has in a few instances been suspected of causing poisoning. The cheaper grades of cooking utensils sometimes contain antimony, and an instance of group poisoning affecting seventy persons in Great Britain in 1928 was attributed to antimony salts dissolved from a container by artificial lemonade (*Lancet* 2:359 [Aug. 18] 1928). In such cases as described in the query, the free vomiting is usually sufficient to evacuate the stomach; the irritable stomach and bowels may be treated with suitable remedies.

DESENSITIZATION TO BACTERIAL PROTEIN

To the Editor:—Kindly explain the best method to desensitize my father against nasal sinus bacterial protein. He is a farmer, aged 54, and was in good health up to 53 years of age, except for chronic disease of the nasal sinus most of his life, which never severely incapacitated him. Suddenly at 53 he developed a severe asthma. Competent sinus surgery was immediately done with the usual prolonged convalescence. There is no history of other allergic conditions, and the only thing he is sensitive to is the streptococcus in his nose. Asthma has subsided considerably following surgery. He would be in good health if it were not for the attacks of asthma. All other foci have been ruled out. He is highly sensitive to the streptococci and, on two occasions, attempts at desensitization were made with an autogenous vaccine, but both times this made him much worse. Should I try again with less potent solutions or just what is the status of using autogenous bacterial proteins to desensitize? Suggestions on any other additional medication would be greatly appreciated. Please do not mention my name.

M.D., New York.

Answer.—It is evident that the injections of the auotgenous vaccine are too strong. It would be preferable to dilute the vaccine with sterilized physiologic solution of sodium chloride to a strength of 1:10, or even 1:100 if the former proves strong. The injections should be started at 0.1 cc. subcutaneously, and each dose should be about 50 per cent stronger, provided there is no marked local reaction and no aggravation of the asthma. Good results are frequently obtained in this way and increase of symptoms is quite uncommon. It is essential, of course, that aseptic precautions be maintained at all times. This is necessary because, if the vaccine should by any chance become contaminated by live organisms, each injection would tend to cause asthma.

Although positive skin tests are less frequent at the age of 53 than in childhood and youth, it is distinctly worth while to run through the whole line of pollen and protein sensitization tests on the chance of discovering some factor that might be removed. If these are negative and good results are not obtained by the autogenous vaccine, other methods of treatment may be tried. These include stock respiratory vaccines, sodium iodide intravenously, and roentgen therapy to the chest or spleen or both. As a last resort, fever treatment by diathermy may give temporary relief or it also may fail.

PLASTIC INDURATION OF PENIS

To the Editor:—I have a patient in his late fifties who is suffering with a fibrosis which involves about one third of the corpora cavernosa. Can I offer this man a cure for his condition? What is the treatment? Please omit address and name.

M.D., Mexico.

Answer.—The condition, variously designated as fibrous cavernositis, chronic cavernositis, plastic induration of the penis, and induratio penis plastica, is a rather rare condition, which starts as a painless lump, gradually increases in extent, soon arrives at its maximum dimensions, and remains stationary thereafter. The condition is harmless and never undergoes malignant degeneration. It remains painless, and its only symptom is interference with full erection at coitus, the organ generally becoming bent during the act. The condition must be differentiated from carcinoma of the penis.

Although spontaneous disappearance and cure has been reported, such a happy termination is exceedingly rare. In the vast majority of cases no beneficial effect has been experienced from the use of internal medication. Occasionally, when there is a syphilitic history, a good result will be obtained by the use of large doses of iodides and mercury.

Local treatments, such as external applications of iodine, mercury and iodoform, have been found useless.

The best results have been obtained by operation consisting in the removal of the mass. Corbus has reported a successful result with diathermy, and Fuhs with radium.

The following recent articles may be consulted:

Bromberg, Perry: Induration of Corpora Cavernosa, *J. Tennessee M. A.* **11**:78 (July) 1918.

Bromberg, Perry: Fibrous Cavernositis, *South. M. J.* **14**:480 (June) 1921.

Corbus, B. C.: Chronic Cavernositis Cured by Diathermy, *J. Urol.* **16**:313 (Oct.) 1926.

Kretschmer, H. L., and Fister, G. M.: Plastic Induration of the Penis, *J. Urol.* **16**:497 (Dec.) 1926.

Fuhs, H.: Ueber die therapeutischen Erfolge der Radiumstrahlen bei Induratio penis plastica, *Strahlentherapie*, Sept. 18, 1929.

HEREDITY AND HARELIP

To the Editor:—I have a patient who gave birth to a child with a harelip, about four years ago. This patient is now pregnant again. Will any form of medication or diet improve the chances of giving birth to a child free of any developmental defects? What medication and what diet would you recommend? Would viosterol be of any benefit? The parents are both healthy and free of any blood taint. Please omit name.

M.D., Pennsylvania.

Answer.—As harelip is due to a failure of closure of a normal cleft at the proper time, it is probable that one of a number of different agencies might be responsible for this condition. Thirty per cent of the cases occur in families in which there is an hereditary tendency to this condition. Though definite knowledge as to the cause does not exist, a severe dental disturbance or a pronounced vomiting within the first six weeks of pregnancy has been rather noticeable in the history of a number of cases without apparent hereditary taint. The mother should be kept in the best nutritional condition.

PÂTÉ DE FOIES GRAS — VEGETABLES — COD LIVER OIL

To the Editor:—I should like to have some information relative to: 1. The iron content of pâté de foies gras. 2. The use of uncooked vegetables for children of preschool age. 3. The use of strong juiced vegetables for children of preschool age. 4. The amount of cod liver oil to be given children from infancy to school age. 5. The amount of viosterol to be given to children from infancy to school age.

M.D., New York.

Answer.—1. A comprehensive search of various treatises and special articles in the dietetic and biochemical literature failed to reveal the iron content of pâté de foies gras. This food delicacy consists of a fine paste made from the muscles and various internal organs of numerous animals, fowls, fish and crustaceans. Into this paste is introduced and incorporated fat, goose liver and truffles; this mixture is sterilized by cooking and the end-result is of creamy consistency. Strasbourg pâté de foies gras gives the following analysis: nitrogenous substances, 14.6 per cent; fat, 33.6 per cent; carbohydrate, 2.7 per cent; ash, 3.1 per cent. Caloric value per hundred grams, 383.

2. Uncooked vegetables for children of preschool age are yet not included in the most generally accepted dietaries. The

danger of enteral infections is considerable. Cooking breaks down starches and renders digestion more complete. Aspiration of uncooked vegetable particles is not infrequent.

3. Strong juiced vegetables are generally omitted from the dietary of small children.
4. Cod liver oil may be given in daily dosages of from 8 to 12 cc. (2 to 3 drachms) from the new-born period to the age of 2 years, except in extremely warm weather. Cod liver oil may be given to children aged from 2 to 6 years in the fall, winter and early spring, in doses of from 8 to 15 cc. (2 to 4 drachms) daily.
5. Viosterol 250 D may be given to infants from the new-born period to 2 years of age in doses of from four to ten drops daily. After 2 years of age, unless used for a definite clinical need, viosterol has no rational indication.

SENSITIVITY TO LETTUCE

To the Editor:—I have a patient who has a papular eruption of his face and hands which seems to be caused when he is harvesting lettuce. It disappears when he stops handling lettuce. Can you tell me whether lettuce can cause a dermatitis, as I have never seen a case and am unable to find anything in the literature? Is there any remedy other than abstaining from handling lettuce, if it is the cause? Please omit name and town.

M.D., California.

Answer.—In The Journal, Jan. 9, 1932, p. 137, there appears a report of a case by Drs. Herbert J. Rinkel and Ray M. Balyeat, entitled "Occupational Dermatitis Due to Lettuce. Positive skin tests to lettuce are frequently found in patients suffering from some allergic disease. A simple test is the contact or patch test, which is performed by cleaning the back with soap and water and alcohol, and drying. Some lettuce leaves are ground up, moistened, and placed on a small square of gauze next to the skin. Over this a larger square of oiled silk is placed, held by two strips of adhesive plaster. This is kept on for about forty-eight hours. If lettuce is the cause of the eruption there should develop within that period (often a contact test becomes positive within an hour) a redness and itching eruption localized to the patch. The surrounding skin serves as a control. If the test is positive and circumstances demand it, desensitization can be tried by injecting extracts of lettuce. However, wearing rubber or light cotton gloves while harvesting lettuce should suffice to prevent the eruption.

PAIN IN STUMP AFTER AMPUTATION

To the Editor:—Can you recommend any treatment for neurofibromas when operations by two of our best surgeons have failed to relieve the symptoms? The patient has an amputation of the upper arm at the junction of the upper and middle thirds, secondary to a crushing of the arm in an automobile accident. At present there is no neuroma palpable, and the stump itself is not painful, but the patient "feels a burning pain in the fingers all the time."

Arthur F. Holding, M.D., Albany, N. Y.

Answer.—Pain in the remaining portion of an amputated limb is designated as painful stump when there is no obvious cause for the pain. Repeated examinations may fail to reveal neurofibromas or involvement of the nerve in scar tissue, and little relief follows repeated injections of alcohol and resection of the nerve. Burning pain, subjectively located in the fingers following amputation, may assume the characteristics of a causalgia, and because sympathetic denervation of the extremity has relieved some cases of causalgia, this operation should be considered. In the upper extremities it is possible to block the sympathetic rami with procaine hydrochloride, injected paravertebrally as a preoperative test. Should the pain be relieved following injection, cervicothoracic sympathetic ganglionectomy can be performed.

EPILATION BY DIATHERMY OR ELECTROLYSIS

To the Editor:—Please inform me whether for the removal of hair from the face diathermy is better than electrolysis. If so, what book on diathermy with the technic for removing hair do you recommend? Please omit name.

M.D., Porto Rico.

Answer.—The only advantage of epilation by diathermy over electrolysis is in the rapidity with which it can be done. The needle must follow the follicle just as in the older process, but one to two seconds is sufficient for the current. Whether the danger of objectionable scarring is greater by the new method has not yet been determined. The following references may be consulted:

Turrell, W. J.: The Principles of Electrotherapy, ed. 2, Oxford University Press, 1929, p. 359.

Andrews, G. C.: Diseases of the Skin, Philadelphia, W. B. Saunders Company, 1930, p. 975.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

American Board of Obstetrics and Gynecology: The examination will be held in nineteen different cities in the United States and Canada, Oct. 22. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

National Board of Medical Examiners: The examinations in Parts I and II will be held at all centers where there are five or more candidates available in a Class A medical school, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

New Hampshire: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

Porto Rico: San Juan, Sept. 6. Sec., Dr. O. Costa-Mandry, Hospital Mimiya, Santurce, San Juan, P. R.

National Board of Medical Examiners

The National Board of Medical Examiners reports that its certificate was awarded to forty-five candidates at a meeting held in Boston in April, 1932. The following colleges were represented:

College	Year Grad.
Yale University School of Medicine	(1930)
Georgetown University School of Medicine	(1929)
Johns Hopkins University School of Medicine	(1929), (1930)
Boston University School of Medicine	(1928), (1930)
Harvard University Medical School	(1924), (1928, 2), (1929, 5), (1930, 13), (1931)
Tufts College Medical School	(1930, 8)
University of Minnesota Medical School	(1930)
Albany Medical College	(1929, 2)
Columbia University College of Physicians and Surgeons	(1930)
Long Island College Hospital	(1930)
University of Virginia Department of Medicine	(1930)
McGill University Faculty of Medicine	(1929), (1930)
University of London Faculty of Medicine	(1925)

Arkansas May Report

Dr. Sam J. Allbright, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, May 10-11, 1932. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Thirty-eight candidates were examined, all of whom passed. Five physicians were licensed by reciprocity with other states from Jan. 9 to May 17, 1932. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine		(1932)	78.8, 80.3, 81, 83.3, 83.4, 83.5, 83.8, 83.8, 84.2, 84.7, 84.9, 85, 85, 85, 85.2, 85.4, 85.7, 85.8, 85.8, 85.8, 86, 86.1, 86.3, 86.6, 86.6, 86.6, 86.6, 87, 87.6, 87.8, 87.8, 88.2, 88.4, 88.8, 90, 90.3, 90.7
Tulane University of Louisiana School of Medicine		(1915)	81.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University School of Medicine		(1928)	Missouri
Atlanta School of Medicine, Georgia		(1907)	Georgia
University of Maryland School of Medicine		(1901)	N. Carolina
Medical College of the State of South Carolina		(1901)	S. Carolina
University of Nashville Medical Department		(1908)	Oklahoma

Minnesota April Report

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 19-21, 1932. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, all of whom passed. Six physicians were licensed by reciprocity with other states and one physician was licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1930)	93.3
Rush Medical College		(1929) 95.2, (1932)	92.3
[illegible] a College of Medicine		(1928)	94.6
[illegible] Medical School		(1931)	85,* [illegible] 89.1, 89.3,* 90.6,* 91.1, 91.1,* 91.2, 91.2,* 91.6,* 91.6,* 92.2,* 92.5,* 93 2,* 93.3,* (1932) 89, 90.2, 91 *
University of Nebraska College of Medicine		(1931)	88.2
University of Cincinnati College of Medicine		(1931)	91.3

University of Tennessee College		90.3
University of Texas School of		90.2
University of Virginia Departm		93.6

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1917)	Wisconsin
Northwestern University Medical School	(1907), (1931)	Illinois
Rush Medical College	(1931)	Illinois
University of Oklahoma School of Medicine	(1925)	Illinois
University of Oregon Medical School	(1929)	Oregon

LICENSED BY ENDORSEMENT

College	Year Grad.	Endorsement of
Harvard University Medical School	(1928)	N. B. M. Ex.

* These applicants have received their M.B. degree and will receive their M.D. degree on completion of an internship.

Book Notices

Cytology and Cellular Pathology of the Nervous System. By Various Contributors. Edited by Wilder Penfield, Professor of Neurology and Neurosurgery, McGill University, Montreal. In three volumes. Fabrikoid. Price, $30 per set. Pp. 1267, with 886 illustrations. New York: Paul B. Hoeber, Inc., 1912.

The fields of modern neurology and psychiatry have grown so immense that one person cannot master even the important phases pertaining to anatomy, physiology and pathology of these sciences. For this reason the editor, in preparing his system, had to resort to the cooperation of a number of investigators (anatomists, histologists, neurosurgeons, ophthalmologists and pathologists) in this country and abroad. Of the twenty-six contributors, eleven are from the United States, nine from Europe and six from Canada. The topics, though somewhat diversified, manifest some semblance of a system. Thus the first volume is given to the structure of normal and pathologic cells and nerves, seventy-six pages being devoted to the subject of nerve endings, while such topics as inflammation, structures that have some relationship to the cerebrospinal fluid, and the meninges are taken up in the other two volumes but are covered only partially. Two hundred and twenty-eight pages of the third volume are devoted to tumors, the rest of the volume being given over to discussions on malformations of the central nervous system, inflammatory cells and neuromas of the appendix. There is evidently a lack of proportion between the various contributions, and repetitions are unavoidable with so great a variety of authors. Competently as the subjects were dealt with, many views expressed are not altogether clear, and for this reason they are somewhat misleading. For instance, of the Virchow-Robin spaces, the author says "that there is a potential space outside the vascular adventitia is well established. . . . The microglial cells carry all or a part of their load to the vessels, where it may be taken up by the endothelial cells." With regard to nerve regeneration, "the phagocytosis finished, the phagocytes depart, the enormous granular corpuscles escaping through the protoplasm and membrane of Schwann." Endothelial cells are considered as "possible macrophages." Such statements as the foregoing should have been elaborated on and corroborated by proper photomicrographs and legends. The somewhat episodic character of the system may interfere with its usefulness in spite of the generally good and, in some instances, even excellent contributions. Many of these deal with subjects repeatedly recorded by the same authors elsewhere, and a beginner or a clinician may find the system too complicated.

Pseudo-Ulcus ventriculi mit besonderer Berücksichtigung der benignen Tuberkulose. *Klinisch-operatives* Studium an Hand von 35 bzw. 50 Pseudo-Ulcera und Ulcera peptica. Von Halldór Hansen, Privatdozent an der Universität in Reykjavik. Paper. Pp. 430. Copenhagen: Levin & Munksgaard, 1932.

Although the number of books on peptic ulcer is legion, as remarked in the preface, the author knows of no monograph devoted to the well known and important syndrome of pseudo-ulcer, and he proposes to supply this lack. His first publication in this connection was a report in 1921 on more than 2,700 ambulatory patients, half of whom were dyspeptic. It was found that the incidence of tuberculosis among the dyspeptic was double that among the nondyspeptic. Early in his practice, also, he noted the frequency of negative operative observations in patients who gave a long and typical history, quite as typical as that given by patients in whom ulcers were found. Thus it seemed desirable to illuminate the diagnosis and avert useless and dangerous operations or tedious medical management in cases of pseudo-ulcer. Although this was at first the object of his work, Hansen soon became interested in the etiology and pathogenesis of pseudo-ulcer, and it appeared that tuberculosis was an important factor. Accordingly this volume deals with (1) the difficulty of differential diagnosis between pseudo-ulcer and true ulcer, (2) the different theories of pseudo-ulcer, especially the tuberculosis theory, and (3) the relation of pseudo-ulcer to true peptic ulcer and the relation of both to tuberculosis. The material studied consisted of thirty-five patients with severe symptoms of ulcer, but no ulcer at operation, and fifty patients with surgically proved ulcer. If any reader is disposed to regard the material as small for so large a book, he should be reminded that the cases were investigated with meticulous Teutonic thoroughness. Case reports are given in full, data are analyzed, compared, correlated and tabulated exhaustively, and other writers are cited abundantly.

As to the clinical differential diagnosis between pseudo-ulcer and true ulcer, Hansen regards the following as suggestive of the former: 1. Digestive disturbance in a woman, beginning in the first or second decennium. 2. When the symptoms follow febrile or exhausting conditions. 3. Burning, superficial or neuralgic, para-epigastritic distress. 4. Irregularity of symptoms, without typical periodicity. 5. Continued vomiting, especially early in the morning or during or immediately after the meal. 6. Intolerance for milk, sugars and fats. 7. Attacks of painless diarrhea. 8. Marked nervous symptoms. 9. Anemia without occult blood; loss of weight without known cause or in spite of full diet; continued slight elevation of temperature. 10. Hypersecretion with a Rubow-Kemp coefficient below 250; retention without hyperachlorhydria; constant absence of occult blood. 11. Ulcer management ineffective.

To those who are accustomed to expect substantial aid in the differential diagnosis from an efficient roentgenologic examination, Hansen's statistics will be disappointing. Of the fifty patients with ulcer, thirty-three were examined with the roentgen ray; the niche of the ulcer was definitely demonstrated in only eleven, and what was suspected to be a niche in two others. Among the thirty-five patients with pseudo-ulcer, twenty were studied with the roentgen ray; no niche was reported in any case, but a suspected niche was seen in two and other deformities and anomalies in a third of the cases.

In reference to the cause of the symptoms in pseudo-ulcer, Hansen states that there are a great number of gastric and extragastric diseases and conditions that may give rise to the symptom complex of peptic ulcer. In his particular group, Hansen considered pulmonary tuberculosis, usually of a benign type, to be the most probable chief etiologic factor, and presents detailed arguments for this view. The typography and paper are of excellent quality, and English-speaking physicians who have difficulty in translating certain of the German textbooks will find this volume readily understandable.

New and Nonofficial Remedies, 1932, Containing *Descriptions of the* Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1932. Cloth. Price, *postpaid*, $1.50. *Pp.* 492. Ivl. Chicago: American Medical Association.

Not every year can bring the announcement of such noteworthy additions to the medical armamentarium as were arsphenamine and insulin. But each year does find the manufacturers of pharmaceuticals bringing to the attention of physicians new preparations the value of which must be finally adjudged by time and usage. The busy practitioner has not the time, even if he had the ability, to pick out from among these many new preparations those which give real promise of usefulness; therefore the Council on Pharmacy and Chemistry was established to make this discrimination for him, and the preparations recognized by this distinguished body of medical and scientific men are described in this volume. In addition, each year the Council scans and revises the descriptions of individual drugs and the expository general articles of New and Nonofficial Remedies to keep it at the forefront of current medical thought.

Among the articles newly revised in the present edition are Barbital and Barbital Compounds; Fibrin Ferments a

Thromboplastic Substances; Liver and Stomach Preparations; Mercury and Mercury Compounds; and Ovary. Perhaps the most noteworthy new preparations admitted are Nupercaine-Ciba, a local anesthetic; pentobarbital sodium, a barbituric acid derivative; and Iopax, a new preparation for roentgenologic use. Noteworthy is the omission of all the ovary preparations formerly described. None of the newer standardized ovary preparations are described, though the names Theelin and Theelol are recognized. Another change of importance is the classification of articles formerly "Exempted" under the heading "Accepted but Not Described." The usual excellent index and augmented Index of Proprietaries not Included in N. N. R. appear in this edition. The book is truly indispensable to the physician or student who would keep informed on the latest advances in drug therapy.

Die Zuckerkrankheit und ihre Behandlung im Kindesalter. Von Dr. Richard Priesel, Assistent an der Universitatskinderklinik in Wien, und Dr. Richard Wagner, Privatdozent für Kinderheilkunde an der Universität Wien. Paper. Price, 15.60 marks. Pp. 211, with 9 illustrations. Leipzig: Georg Thieme, 1932.

This excellent and comprehensive monograph is the result of the authors' personal study of diabetes in children, which was carried out in the Pirquet children's clinic in Vienna, where a special ward was devoted to the study and care of these children. The authors have dedicated this book to the memory of their distinguished teacher, Clemens Pirquet. The introductory chapters contain excellent material on the etiology, racial distribution, hereditary influences and general symptomatology of diabetes in children. The relationship of childhood diabetes to tuberculosis, circulatory diseases, renal disturbances and the sexual development of the child are carefully considered, as are diabetes of infancy and the differential diagnosis of the glycosurias. A complete chapter on the metabolism of diabetes and a discussion of the acetone bodies and the mechanism of the action of insulin are convincing evidences of the brilliant understanding the authors have of their subject matter. Clear discussions are given on the calculation of diets, and sample diets, on the technic of insulin administration, and on the occurrence and management of hypoglycemia, diabetic coma and infection, so that the practicing physician in reading these chapters can obtain applicable knowledge in the handling and treatment of his own small patients. Finally the home care, prognosis and outcome of juvenile diabetes are discussed in detail, and a complete bibliography is appended. The authors are to be congratulated because they have combined in a superbly written monograph the most detailed and critical physiologic and pathologic discussion of the metabolic mechanisms and dysfunctions of the diabetic child, together with a concise and easily applicable minute discussion of the treatment and care of the juvenile diabetic patient gained from careful personal knowledge and study.

The Culture of the Abdomen: The Cure of Obesity and Constipation. By F. A. Hornibrook. Preface by Sir William Arbuthnot Lane, Bart., C.B., M.S., Consulting Surgeon to Guy's Hospital. Seventh edition. Cloth. Price, $2. Pp 94, with 42 illustrations. Garden City: Doubleday, Doran & Company, Inc., 1932.

This is a new printing of a volume that has had considerable vogue since 1924. Its author is convinced that the muscles of the abdomen do not get enough exercise and that proper activities of the thorax and musculature will control posture, flatfoot, constipation and similar disturbances. He describes these exercises in detail. The publisher presents statements by R. Tait McKenzie, Sir William Arbuthnot Lane and Arnold Bennett to prove that these exercises will reduce weight and make people feel better.

Les tumeurs du quatrième ventricule: Étude anatomoclinique et thérapeutique. Par Jean Lereboullet. Travail de la clinique neurologique de la Salpêtrière. Professeur: M. G. Guillain. Paper. Price, 65 francs. Pp. 431, with illustrations. Paris: J. B. Baillière & Fils, 1932.

This sober and exhaustive study of tumors in a limited region of the intracranial cavity can be highly recommended to the attention of any one interested in the subject. The author is perfectly familiar with the recent work concerning intracranial tumors—their pathology, symptomatology, diagnosis and treatment—and applies this knowledge judiciously to his limited subject. His critical remarks are just, save perhaps when he attempts to explain the predominance of cerebellar symptoms on a phylogenic basis. This predominance can be much more simply explained by the fact that he has excluded, by definition, from his group of tumors of the fourth ventricle those which arise from the bulb and project into the fourth ventricle and has included, also by definition, the medulloblastoma, which is primarily a tumor of the vermis of the cerebellum. No such predominance of cerebellar over bulbar symptoms is evident in the case of the papilloma, which is *par excellence* a tumor neither of the cerebellum nor of the bulb.

Wheeler and Jack's Handbook of Medicine. Revised by John Henderson, M.D., F.R.F.P., Physician, Glasgow Royal Infirmary. Ninth edition. Fabrikoid. Price, $4. Pp. 654. New York: William Wood & Company; Edinburgh: E. & S. Livingstone, 1932.

The original plan of the authors to prepare a handbook of medicine has been preserved throughout the various editions of this work. The present edition is still a handy pocket size volume with a flexible back. It is a careful revision of the previous edition. Some sections have been rewritten; for example, those on vitamins, pernicious anemia, epidemic encephalitis and arthritis deformans. There have been added sections on syphilis of the stomach, hepatic efficiency, cholecystography, acute febrile poliomyelitis, and some of the neuroses. Even so, the size of the volume has not been much increased. Dr. Jack, who made all the previous revisions from the second to the eighth, passed away in 1927, and Dr. Henderson alone has revised the present edition.

Clinical Lectures on Psychological Medicine. By Henry Yellowlees, O.B.E., M.D., F.R.F.P.S., Physician for Psychological Medicine, St. *Thomas's Hospital, London. Cloth. Pp. 310. London: J. & A. Churchill,* 1932.

This is a book of lectures by a practical man of large experience with the study and handling of neurotic and insane patients. He says that his lectures "are an attempt at a return to that clinical approach which is the foundation of all sound medical teaching and is nowhere more essential than in psychiatry." The elements of psychotherapy are discussed. There are lectures on syndromes, such as states of depression, elation, stupor and confusion. The principal psychoses and psychoneuroses are described and contrasted. Neurotics, the author says, are made, not born, and the causes of the neuroses are laid in upbringing, environment, and the effects of external circumstance. Psychotics, on the other hand, are born, not made, and "sufferers from the typical psychoses have been ordained to them, as it were, from the foundation of the world." The test of insight is considered crucial: Every sufferer from a neurosis has insight, that from a psychosis has not. The author does not admit that even the patient with melancholia has insight. He may admit being ill but wrongly regards his illness as due to his own failure or wrongdoing. Four neuroses are recognized: neurasthenia, which is rare and which is abnormal fatigability; anxiety states; obsessional states or compulsion neurosis; hysteria. The author acknowledges a great debt to Freud, but he is not satisfied with freudian psychoanalysis and says that psychology is waiting for something better. Altogether, the book is well conceived and well written and repays reading even if one may disagree with the author here and there.

The Athlete in the Making. By Jesse Feiring Williams, M.D., Professor of Physical Education at Teachers College, Columbia University, *and Eugene* White *Nixon,* M.A., *Professor of* Physical Education at Pomona College, Claremont, California. Cloth. Price, $2.50. Pp. 258, with illustrations. Philadelphia & London: W. B. Saunders Company, 1932.

The authors have presented clearly the elements of athletic success; namely, coordination, speed, endurance, strength, intelligence and spirit. These combined elements make for athletic skill. The second part of the book discusses the factors involved in the training and conditioning of athletes and the special requisites necessary for the training in each of the elements discussed in the early chapters. There is a chapter on diet, another on training rules. There is a brief chapter on injuries in athletics, with especial reference to prevention. The fundamental principles described in the early chapters are applied to various sports, such as football, golf, baseball, track, tennis and swimming. The authors do not go into the details of the form and technic in sports. This book is a welcome contribution and should be beneficial to coaches, athletic directors and athletes as well as physicians.

Les troubles du sommeil: Hypersomnies, insomnies, parasomnies. Par Henri Roger, professeur de clinique des maladies nerveuses à la Faculté de médecine de Marseille. Paper. Price, 20 francs. Pp. 206. Paris: Masson & Cie, 1932.

In this little book, prepared for the guidance of the practicing physician, the author discusses the pathology of sleep rather than its physiology. Various abnormalities of sleep are taken up from the standpoint of their probable etiology, and appropriate treatment is suggested. The handling of the subject is somewhat involved because the writer separates sleep and its disturbances into three artificial elements, vegetative, cerebrospinal and psychic. The volume also suffers from the absence of a bibliography.

Manual of Bacteriology. By Robert Muir, M.A., M.D., Sc.D., Professor of Pathology, University of Glasgow, and the late James Ritchie, M.A., M.D., F.R.C.P. Revised by Carl H. Browning, M.D., D.P.H., F.R.S., Gardiner Professor of Bacteriology, University of Glasgow, and Thomas J. Mackie, M.D., D.P.H., Irvine Professor of Bacteriology, University of Edinburgh. Ninth edition. Cloth. Price, $4.75. Pp. 866, with 237 illustrations. New York: Oxford University Press, 1932.

The general characteristics of this book are well known to the medical profession. It has been used as a textbook in some schools for a long time. Practically every section has been revised and some have been rewritten, especially those on streptococci and the filter passing viruses. Other sections have been condensed, leaving out material that is now out of date. The bacteriologic literature has become so great that to incorporate all of the important papers in a book of this class would be impossible. The bibliography therefore has been reduced and the size of the volume remains about the same.

Traité de physiologie, normale et pathologique. Publié sous la direction de G.-H. Roger, professeur honoraire de physiologie à la Faculté de médecine de Paris, et Léon Binet, professeur de physiologie à la Faculté de médecine de Paris. Tome II: Alimentation et digestion. Par MM. E. Bardier, G. Battez, et autres. Cloth. Price, 100 francs. Pp. 565, with 31 illustrations. Paris: Masson & Cie, 1931.

This volume deals with the physiology of the alimentary tract, including chapters on food, hunger and thirst. The references to the literature are scanty. The paragraphs on the pathologic physiology of the digestive tract are rather superficial for a volume of this size. More and better illustrations would have enhanced the value of the book. The informed and critical reader finishes the volume with the impression that it is just one more textbook on digestion, but neither in content nor in form is it a significant contribution to physiology and medicine.

Know Your Child. By Louis Monash, Principal of Public School 33, The Bronx, New York City. With a foreword by Dr. John H. Finley. Cloth. Price, $2. Pp. 246. New York: Whittlesey House, McGraw-Hill Book Company, Inc., 1931.

There have been many books written in the last decade concerning the building of character and the control of the child's behavior in the home. Only through frank dealing with children can parents hope to retain their respect and confidence. Parents must be willing to admit their mistakes to the child and to regard their children with a scientific and sympathetic attitude. This book has been written for the purpose of teaching parents how to aid the child in making personal and social adjustments and emphasizes especially the building of confidence—of the parent in the child and of the children in their elders. The incidents related are typical and make the book interesting and practical. Perusal of the material should aid parents in overcoming and preventing many bad habits and behavior problems in their children.

Introduction à la chirurgie nerveuse. Par E. E. Lauwers. Préface du Pr. Georges Guillain. Paper. Price, 25 francs. Pp. 121. Paris: Masson & Cie, 1932.

The general surgeon is much alarmed when he sees that the surgery of the nervous system is slowly slipping through his fingers. This little book has evidently been written in a spirit of revolt against this tendency. The author seems to think that he has written down within its brief pages all the knowledge that is necessary to qualify one to operate on the nervous system. The writer of the preface seems to agree with him; but the information contained in this little book does not approach either in extent or in accuracy the information which one would expect the ordinary medical student to possess who has passed through his courses concerning surgery of the nervous system. The discussion of the physiology of the brain is rudimentary. The treatment of tumors of the brain is embryonic. Certainly if the general surgeon wished to retain the surgery of the nervous system he will have to present better qualifications than is evident in this elementary treatise.

Primary Carcinoma of the Lung: Bronchiogenic Cancer. A Clinical and Pathological Study. In two parts. By B. M. Fried, M.D., Peter Bent Brigham Hospital, Boston. Cloth. Price, $5. Pp. 217, with 95 illustrations. Baltimore: Williams & Wilkins Company, 1932.

This monograph is divided into two parts. The first deals with incidence, etiology, histogenesis, classification, metastases and duration. The second part discusses diagnosis, based on history, physical observations, laboratory examination of sputum, pleural exudate and tissue removed during bronchoscopic examination, and roentgen examination. A final chapter is devoted to detailed case reports with comments. It is well illustrated. A bibliography and an index are appended. The volume presents systematically much valuable information on a subject of growing clinical interest and importance.

Körperschmerzen und ihre Differentialdiagnostik. Von Hofrat Prof. Dr. Norbert Ortner. Fourth edition. Paper. Price, 30 marks. Pp. 726. Berlin: Urban & Schwarzenberg, 1931.

This edition of Ortner's book on pain is a masterful treatise on differential diagnosis. The author repeatedly calls on his own wealthy clinical experience and that of his teachers and colleagues throughout the famous European clinics to paint realistic pictures of the varied manifestations of pain throughout the body. The book is written in interesting style and is actually an encyclopedia, in addition to its many other virtues. It is highly recommended to any one wishing to benefit by the tremendous experience of the writer.

A Textbook of Bacteriology. By Kenneth L. Burdon, Sc.M., Ph.D., Instructor of Bacteriology, Immunology and Public Health, Washington University School of Medicine and School of Nursing, St. Louis. Fabrikoid. Price, $2.75. Pp. 542, with 89 illustrations. New York: Macmillan Company, 1932.

This book is designed primarily for the instruction of nurses, although it might be used for general college students. It is hardly complete enough for instruction in medical schools. The approach to the subject of bacteriology is the usual historical one, and the author has done a distinctly commendable piece of work. The greater part of the volume is general in character, with comparatively brief descriptions of pathogenic micro-organisms. This method of presentation is far better than to attempt to present detailed descriptions of bacterial species to nurses. The chapter dealing with practical sterilization and operating room procedures is an illustration of material that should be of benefit to nurses. To be sure, there might be some difference of opinion as to whether or not the gown and mask should be removed before or after washing the hands, or whether a mask should be used at all. On the whole, the methods described represent good practice. The section dealing with infection and resistance contains little theoretical material and is readable. The book can be cordially recommended. The printing and illustrations are excellent.

Krankheitserreger und Gewebsbefunde bei multipler Sklerose: Vergleichend-histologisch-parasitologische Untersuchungen bei multipler Sklerose und anderen Spirochätosen. Von Professor Dr. Gabriel Steiner. Paper. Price, 24 marks. Pp. 196, with 71 illustrations. Berlin: Julius Springer, 1931.

The author has long attempted to place multiple sclerosis on the basis of a spirochetal disease. He has described a short, thick spirochete in sections by the silver method and attained some success at transmission of this organism to the experimental animal. His experimental work has not been confirmed, although such men as Hideyo Noguchi have attempted it. Most histopathologists consider that the spirochetes in sections which Steiner describes are artefacts produced by the silver or fragmented pieces of axis cylinders. In the present volume the author attempts to show a similarity of the histology of dementia paralytica, with its large areas of perivascular demyelinization, with that of multiple sclerosis, and by such procedure strengthen his conception that multiple sclerosis is a spirochetal disease. The work adds nothing that his previous publications have not brought out, and this monograph is interesting only to the worker in the special field.

Medicolegal

Prescribing Exercises for Eye Muscles as "Treatment of the Sick"

(Nickell v. State (Wis.), 238 N. W. 508)

The American Society for the Conservation of Vision maintained offices in Milwaukee, with the defendant, Nickell, as its manager. A Miss Hodge and a Mrs. Nelson went to those offices, and there, in Nickell's presence, the office girl said "This is Dr. Nickell and he'll take care of you." On Nickell's invitation, they went with him into another room, where he examined their eyes, using an ophthalmoscope and having them look through various lenses at lettered charts. He told each of them that she had astigmatism but that after the treatments were over she would need no glasses. Later he gave each of them a chart with dots and lettering and told them to take those charts home and to look at the dots from different angles and otherwise to exercise their eyes daily. Nickell was charged with unlawfully treating the sick without having a certificate of registration in the basic sciences and with unlawfully using or assuming the title "Doctor." He was convicted and appealed to the Supreme Court of Wisconsin.

It was admitted that Nickell was not licensed in Wisconsin to practice medicine or optometry and that he had no certificate of registration under the basic science act. There was ample evidence, said the Supreme Court, to establish that Nickell had for compensation unlawfully treated the sick. The astigmatism and headaches of Miss Hodge and Mrs. Nelson and the partial paralysis of one Campbell, another patient whom he treated, constituted in each case a disease, as that term is defined by the statutes. The manner in which he examined their eyes, treated, prescribed and advised treatment, and held out that by such treatment their disease conditions, including their sight, would be remedied, clearly constituted treating the sick within the meaning of the law. The attending circumstances and the manner in which all of this was done were such that it would be ridiculous to consider the treatments mere ocular calisthenics on a par with such exercises as are customarily prescribed for ordinary physical culture purposes.

When Nickell was pointed out by the office girl to Miss Hodge and Mrs. Nelson as "Dr. Nickell" he did not say or do anything to dispel the impression conveyed that he was a doctor, but he examined and treated them. On another occasion, when he was asked whether he was "Dr." Nickell, he replied "Yes, sir, I am." Moreover, on hearing the title "doctor" falsely applied to himself by a subordinate employee, he responded to it, adopting and taking that title upon himself by affecting and pretending to have the knowledge, skill and legal privilege to treat the sick, which that title implied under the circumstances.

The convictions in the court below of unlawfully treating the sick without having a certificate of registration in the basic sciences and unlawfully using or assuming the title "Dr." were affirmed.

Testimony of Medical Practitioner as to Correctness of Osteopath's Diagnosis.—One of the plaintiff's breasts had been removed on account of cancer. Later, having pains in her right leg and hip, she consulted the defendant-osteopath. He treated her for rheumatism or arthritis of the hip joint and told her that she had adhesions in her back. In the course of treatment, he bent his patient's knee firmly upward toward her body, pressed his weight on it and twisted it, and the femur fractured. Roentgenograms taken after the fracture showed a carcinoma in the broken femur. The patient sued for damages from malpractice and recovered judgment. The defendant-osteopath appealed to the Supreme Court of Nebraska, claiming that the trial court erred in permitting medical witnesses to testify that the osteopathic defendant's diagnosis was erroneous. But, said the Supreme Court, it has been held that a physician of one school may testify as to the correctness of the diagnosis of a case which a physician of another school treated, where the diagnosis is the same in all schools of medicine, or where a condition exists that should be recognized by any physician. A physician of any school, on learning that an entire breast had been removed "for lumps," would suspect that there had been a cancer and would know that a cancer might develop in the bones of such a patient. He would know, too, that if a cancer did develop in the bones of a patient, the bones would be weakened and could not bear the pressure of twisting and manipulation that it might be possible to employ on the bones of another patient. To make a skilful and careful diagnosis of the trouble from which the patient is suffering is one of the fundamental duties of a physician. If he fails in that regard and damages result, he is answerable for them.—*Cook v. Moats (Neb.), 238 N. W. 529.*

Malpractice: Broken Hypodermic Needle and Res Ipsa Loquitur.—The fact that the point of a needle being used by a dentist to inject novocaine into a patient's gum breaks off in the gum is not of itself evidence of negligence on the part of the dentist. The defendant-dentist did not manufacture the needle which broke. There was nothing in the evidence tending to indicate that there was any defect in the needle or that if any defect existed the defect could have been discovered by the most rigid examination. There was no evidence that the needle was used in a careless or negligent manner or by an unskilled or incompetent dentist. Indeed, the evidence showed that the defendant-dentist discovered the broken needle and undertook to remove it with all facilities available to him at the time. To hold that the doctrine of res ipsa loquitur applied to these facts, says the Supreme Court of North Carolina, would be for all practical purposes to impose the liability of an insurer on a dentist, physician or surgeon, and no court has ever gone that far.—*Smith v. McClung (N. C.), 161 S. E. 91.*

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, French Lick, Indiana, Sept. 12-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.
American Congress of Physical Therapy, New York, Sept. 6-10. Dr. F. B. Balmer, 185 North Wabash Avenue, Chicago, Secretary.
American Hospital Association, Detroit, Sept. 12-16. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.
Colorado State Medical Society, Estes Park, Sept. 8-10. Mr. Harvey T. Sethman, 227 16th Street, Denver, Executive Secretary.
Michigan State Medical Society, Kalamazoo, Sept. 13-15. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.
Utah State Medical Association, Ogden, Sept. 15-17. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.
Washington State Medical Association, Tacoma, Sept. 12-14. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

MISSOURI STATE MEDICAL ASSOCIATION

Seventy-Fifth Annual Meeting, Held in Jefferson City, May 23-26, 1932.

Correction of Prostatic Obstructions by Means of the Resectoscope

Dr. Nelse F. Ockerblad, Kansas City: The history of all transurethral operations goes back to George James Guthrie, who in 1832 devised an operation intended to incise prostatic bars. The history is brought up to the time of Young's punch and of the Caulk cautery punch. There is a wide difference between the punch operation, which removed only tiny bits of tissue, for the most part in a blind fashion, and the present resectoscope, which removes tissue in a clean, bloodless manner under full vision. Thirty cases are cited with a complete study to show the results and to find out the shortcomings as well as the good points of this new method.

Colostomy

Dr. Warren R. Rainey, St. Louis: Sigmoid colostomy is performed only as a life-saving measure or a preliminary step for the removal of the rectum. It should be recommended in all types of anal rectal lesions in which the anal sphincter has been destroyed and there is complete incontinence, and likewise in benign stricture of the rectum and inoperable rectal fistula. There is frequent opposition to the performance of this operation from members of the medical profession. So far as the colostomy operation is concerned, it is well to admit that no type of operation has been devised that will give the patient any assurance that sphincteric control can be developed. The patient, on the other hand, can so readily control the habit of defecation and the required toilet that the emptying of the bowel through the abdominal stoma is not looked on as any distressing handicap. I feel so strongly on this subject that I recommend without hesitation the making of the abdominal stoma in those cases of destruction of the anorectal region in which there is loss of sphincter control, in an inoperable type of stricture, in ulcerative colitis, and in certain of the cases in which the original Kraske operation has been done. The patient is instructed, on rising in the morning, immediately to force a movement of the bowels. Some patients have no difficulty in stimulating a movement by a little abdominal straining. Otherwise, a small catheter attached to the tube and the irrigating can is introduced into the stoma and warm tap water allowed to run until the urge is felt. With a little normal straining the entire bowel is emptied into a kidney shaped basin, held directly under the stoma. Most patients quickly discard the rubber bags and are far better satisfied with a firm binder and pad. By following a plain diet and ordinary discretion, the patient is able for the remainder of the day to engage in such routine occupations, social and recreational, as he sees fit to follow.

Incipient Cataract

Dr. M. Hayward Post, St. Louis: A compilation has been made concerning the age incidence of cataract in 504 cases, those cases being considered positive which showed definite lens changes on routine ophthalmoscopic examination. The various methods proposed from antiquity up to the present time are reviewed and the conclusion is drawn that accurate refraction, combined with good hygiene and care in the use of the eyes, appears to have given the most satisfactory results, but that medical treatment often enables the physician to keep in closer contact with the patient than would otherwise be possible. Close contact is of vital importance in order to control the hygiene and to prevent the occurrence of various infections of the lids and adnexa, which might interfere with the performance of an operation, should one become necessary at a later date.

Retinal Detachment Subsequent to Proliferative Changes

Drs. Emmett P. North and Vincent L. Jones, St. Louis: A child, aged 10 years, was blind in one eye as the result of total detachment of the retina caused by a hyperplastic degeneration of the pigment epithelium. The blind eye was discovered in the course of a routine examination for a minor eye ailment. A relatively small malignant neoplasm may be hidden by the retinal detachment it has produced. The presence of connective tissue, cholestrin crystals and bone marked the process as long standing and, because the proliferated unpigmented and pigmented cells from the pigment epithelial layer and the connective tissue derived from these cells, lay anteriorly and centrally within the folds of the detached retina and posteriorly near the optic nerve adherent to the posterior surface of the retina, the hyperplasia of the pigmented epithelium must have preceded the retinal detachment. The opaque striae observed by transillumination were probably caused by connective tissue masses.

Cancer of the Breast Seven Years After Operation

Dr. John H. Ogilvie, Kansas City: From a series of cases of cancer of the breast in the clinic of Dr. Jabez N. Jackson, 129 cases were selected running from 1909 to 1924. Of the 129 patients, 109 were married women and 20 were single women. The average age of the total group was 44.4 years; 11 per cent of the patients were under 30 years of age, the range of ages being from 17 to 78. The average duration of the disease as denoted by a mass in the breast was 2.4 years, the range in this instance being from 7 days to 8 years. The average age was increased considerably by a number of cases in the 7 and 8 year period. In 62 instances the mass was in the right breast; in 67 cases it was in the left breast. In 72 cases, skin fixation was definitely mentioned as a diagnostic feature; in 24 cases, no mention of this feature was made; in 30 cases the skin was said to have no fixation; in 3 cases nothing definite was said about the skin. Among the 72 cases in which skin fixation was present, all proved to be carcinoma except 3; 2 of the latter proved to be sarcoma, 1 of the inflammatory type and 1 a dermoid with superimposed carcinoma.. In the 129 cases, pain was mentioned only seven times. In 5 cases there was a history of a bloody discharge from the nipple; in 2 there were sinuses in the breast; in 4 there was malignancy of the ductal type, while 1 showed a sarcoma superimposed on a dermoid.

Twenty-seven patients had definite involvement of the axillary structures diagnosed preceding operation; 36 had axillary metastases disclosed at operation; 14 showed microscopic metastases not suspected at operation. Fifty-two cases showed no glandular involvement. Two patients in the group had a mass in the breast for seven years and showed no glandular involvement. In 35 cases it was thought that the chances for a complete cure were good.

Radical amputation was performed in all but eight cases, and in these eight only local amputation was done. Twenty-two amputations were done by the flap method but in all the rest the regular radical amputation was done. In those cases in which the flap method was done, the mass was so situated as to allow its use without endangering the end-result.

There were two deaths in 129 operative procedures; one complicated by thyrotoxicosis and pregnancy; the other patient died of a postoperative pneumonia with lung abscess. The pathologic features were carcinoma 97, medullary carcinoma 4, scirrhous carcinoma 16, sarcoma 5, and doubtful type (carcinoma) 7. The recurrences ranged from one month to thirteen years and eight months. The recurrences appear to have occurred in the greater proportion of cases in two general periods; viz., one around the eleven-month period and a later period of from three to five years. The average was slightly more than two years. The recurrences were in the lungs in 41 per cent, bones 28 per cent, scar 5 per cent, supraclavicular nodes 10 per cent and nervous system 8 per cent. No patients with sarcoma are alive; no patient with medullary carcinoma is alive. Of the 52 patients showing no metastases, 37 are alive. Of the 77 showing metastases or those who were adjudged poor risks for radical cure, 24 are alive and well. This is a percentage of 31.17 in the latter group.

No patients with sarcoma of the breast in this series nor of medullary carcinoma are alive seven years after operation. The chance of cure by radical operation is decreased from two thirds of the cases to less than one third when the disease has ceased to be local. Sixty-one women out of a series of 129 with malignant disease of the breasts are alive seven years after the operation.

Roentgen Examination of the Breast

Dr. Ira H. Lockwood, Kansas City: The mammary gland lends itself readily to roentgen examination. Projection of the gland is made with a minimum of distortion and very little imposition of other structures. On a properly executed roentgenogram there is a smooth, narrow area marking the separation of the breast from the pectoral muscles. The structures appear as a pyramid with the apex at the nipple, and at the base there is a more or less homogeneous mass, which represents the parenchyma. There are delicate strands, which converge into a narrow band and pass to the nipple. The remainder of the gland presents a relatively nonopaque area and represents the stroma of fat and connective tissue.

Benign tumors of the breast are made up in a general way of tissue that more or less closely resembles the normal. The tumors are, as a rule, definitely circumscribed and sharply outlined. The density is homogeneous and the connective tissue stroma is shown through this opacity. The differentiation between a cyst and a solid tumor can usually be made by the degree of density, a cyst being less dense than a solid tumor and more homogeneous. Benign tumors push aside the fatty tissue and other constituents of the breast. They are localized growths with a distinct continuity of the capsule and no evidence of invasion or infiltration.

Malignant tumors of the breast are recognized as a dense mass of tissue with distortion, scarring, puckering and infiltration, and in the more advanced cases a band extends from the nipple to the tumor mass. There is an irregularity of the pyramid and a loss of the normal linear striations and feathery strands of dense, fibrous tissue involving the ducts and lobules with extension along the lymphatics and enlargement of the lymph nodes and loss of the normal muscle planes.

Hormone Control of Changes in the Endometrium During the Menstrual Cycle

EDGAR ALLEN, PH.D., Columbia: The changes that occur in the primate endometrium during the menstrual cycle have now been duplicated experimentally in ovariectomized monkeys by injections of ovarian hormones. It is possible, therefore, to revise the old classification of these changes, which was based entirely on histologic studies before the hormone control had been demonstrated. There are at least two hormones concerned: theelin, which reaches its highest concentration in the follicles but which is also found in the human corpus luteum, and progestin (Corner) or corporin (Hisaw) from the corpus luteum. Action of theelin is essential, for the corpus luteum hormone is ineffective when used alone. Therefore, the action of progestin or corporin is distinctly supplementary to that of theelin.

Experiments with ovarian follicular hormone (theelin, estrin, folliculin, progynon) in laboratory rodents and monkeys have demonstrated that its principal action is to induce growth (hyperplasia) in the tissues of the genital tract, which is followed by the beginning of secretion of the glandular tissues. Theelin also influences the rate and amplitude of contraction of uterine and tubal musculature. The follicular hormone, therefore, is responsible for the wave of growth which periodically runs through the whole genital tract and the mammary glands. But theelin alone fails to give a complete reaction in the endometrium. Progestin or corporin from the corpus luteum continues the endocrine action and produces the tortuous and twisted uterine glands, the swollen cells and edematous stroma of the typical premenstrual endometrium. Paralleling this transformation, additional hypertrophy of the mammary glands occurs. These reactions, therefore, depend on one-two reactions of the theelin and progestin or corporin.

Whether or not ovulation occurs, menstruation may appear at the expected time. Typical menstrual periods follow (1) removal of the ovaries, (2) injury of large follicles and (3) removal of corpora lutea. Similarly, experimental menstruation periods have followed several days after the cessation of long series of injections of follicular hormone. Menstrual bleeding usually does not occur during the injections but begins (after a latent period of a few days) when they are stopped. From these experiments, menstruation is clearly degenerative in significance and follows a growth period resulting from the action of theelin. Although the corpus luteum hormones are necessary for the premenstrual transformation of the endometrium, they are not necessary for the process of menstruation itself.

On the basis of its hormone control, the endometrial cycle may be divided into three periods: (1) postmenstrual, under the influence of theelin; (2) premenstrual, due to action of theelin and progestin or corporin together, and (3) menstrual, due primarily to decreased amounts of theelin.

Experimental Transplantation of the Pancreas Into the Stomach

DRS. A. M. TRIPODI and CHARLES F. SHERWIN, St. Louis: We believe that the cases reported here represent the first successful experiments to anastomose the pancreas into the stomach and establish its normal functions. These experiments were performed in the department of surgery of the St. Louis University School of Medicine.

In the first series of cases the cephalic end of the severed tail of the pancreas was implanted into the lumen of the stomach without disturbing the duct connections in the duodenum. Healing was seemingly by first intention, with no evidence of duct connection between the pancreatic duct and stomach. This may be explained by the secretion following the normal duct system and not creating sufficient back pressure to hold the severed end open into the stomach.

In the second series the head of the pancreas was excised and the cephalic end of the severed neck was implanted into the lumen of the stomach without further separation of its ducts from the duodenum. Here no connection of the duct system with the stomach could be observed, probably for the same physical reason as in the first series.

In the third series the severed end of the head of the pancreas was implanted into the lumen of the stomach through its wall. Here the attempt was made to cut through all duct connections to the duodenum. Two specimens in which the head end of the pancreas was united to the stomach were cut in serial sections. In both specimens the pancreatic tissue attached to the stomach wall was normal and a large duct was discovered just under the gastric mucosa. In one specimen the duct connection to the surface could not be definitely followed, although there were indications of a small duct system continuous with the gastric mucosa. The second specimen demonstrated a large pancreatic duct, in which the lumen was continuous with that of the stomach and the continuity of the mucous membrane of the stomach with that of the duct was easily demonstrable. There was no evidence of any pathologic reaction within the stomach wall or mucosa. Analysis of stomach contents revealed the presence of trypsin. Blood sugar was a little lower than normal and the urine examination was always negative for sugar. The free anastomosis about the pancreas seems to take care of the pancreatic tissue, no matter which part is implanted, as this is borne out by the excellent preservation of the pancreatic substance both in gross and in microscopic specimens. The operative technic apparently effected a firm anastomosis of the pancreas and stomach without leakage of either pancreatic juice or gastric contents, still preserving the internal and external secretory functions of the gland. In these instances the animals gained in weight and remained in good health. The establishment of the possible surgical connection between the pancreas and stomach opens up an extensive research program for both surgical and physiologic investigators.

Syphilis in Compensation Claims as Viewed by the Missouri Workmen's Compensation Commission

JAY J. JAMES, Kansas City: The Missouri Workmen's Compensation Commission holds that all consequences of an accident are personal injuries and includes resulting infections or diseases or an aggravation or acceleration of a preexisting disease. No other course is open to the commission, for the statute does not prescribe any standard of physical fitness to which employees must conform. Syphilis plays an important part in many compensation cases and has led to large compensation expenditures by the employer. One is inclined to think of the benefit to the employee only in dollars and cents that he actually receives when speaking of compensation, but it is more a question of rehabilitation than of economic compensation; therefore when an injured employee has a preexisting syphilitic condition that retards his recovery from injury or when the injury aggravates or accelerates the syphilitic condition, it is the duty of the physician to treat the patient with a view to arresting the syphilis.

Basal Metabolism in Routine Examination of Patients

DR. A. L. ANDERSON, Springfield: In more than a thousand patients examined, the basal metabolism rate was too low in 3.5 per cent and too high in 1.5 per cent, exclusive of suspected toxic goiter. Some patients with toxic adenoma who were later cured by thyroidectomy had either a normal or a subnormal rate. Three patients were cured by thyroid extract. One had bronchitis for over four months, one migraine—three attacks a week—in another, duodenal ulcer was suspected. Not all patients with too low a rate are relieved by thyroid extract. Those who were benefited by thyroid extract had a rate between —20 and —34. Some of the patients with too low a rate who responded favorably to thyroid extract showed none of the symptoms peculiar to low basal metabolism, such as drowsiness, dry skin and loss of hair. Patients with too high a rate without other symptoms of toxic goiter were given an additional metabolic reading before a final opinion was reached. A few patients with rapid heart, loss of weight and nervousness without struma showed a high rate and later proved to have toxic goiter. Such conditions as pulmonary tuberculosis and some types of neurosis with symptoms of toxic goiter may be excluded by determination of the basal metabolism. It is rarely necessary to give large doses of thyroid extract; 3 grains (0.2 Gm.) daily was the largest dose given. Most of these patients responded to half grain (0.03 Gm.) doses three times daily. The following symptoms were often found associated with a low metabolism: drowsiness, dry skin, loss of hair, especially the outer third of the eyebrows, constipation, headache, muscular pains worse at night and chronic eczema.

The Diagnosis of Cerebellar Disease

Dr. B. Landis Elliott, Kansas City: The cerebellum, like the thalamus, is a junction joint for many afferent and efferent nervous pathways which associate it with different parts of the peripheral and central nervous systems. Interference with the cerebellum or its parts creates new conditions in the apparatus of locomotion, so that movement is performed in a faulty manner. A difficulty in the diagnosis of cerebellar disease is due to the fact that damage to afferent or efferent cerebellar pathways is followed by effects similar to those caused by disease of the cerebellum itself. A useful approach to the symptoms of cerebellar disease is through the study of diffuse cerebellar disease with atrophy of the cortex. In tumors and cysts of the cerebellum, hydrocephalus due to damming back of cerebrospinal fluid, and pressure on neighboring structures obscure the clinical picture. In atrophy of the cerebellar cortex, however, such complications are absent and the symptoms are due to absence of cerebellar function alone. Such cases show ataxia, intention tremor, ataxic speech and nystagmus. Other symptoms generally considered to indicate cerebellar disease are vertigo, adiadokokinesis, hypotonia, asthenia and the past-pointing reaction of Bárány. In brain tumor and abscess these cerebellar signs are combined with a pressure syndrome consisting of choked disks, headache and vomiting. The neighboring nervous apparatus may be affected. Among the earliest structures involved is the trigeminal nerve, with loss of the corneal reflex on the same side. In acusticus tumors, the seventh and eighth nerves are affected. Sometimes lesions of the cerebellum exist without giving clear cerebellar signs. Here the difficulties of the diagnosis increase and a knowledge of special syndromes may be necessary.

Peripheral Burns

Dr. B. L. Myers, Kansas City: Burns have been treated too long as local lesions without consideration of the systemic problems. In this industrial age, burns are common. The physician should study them broadly. Much fine experimental work indicates that the chief problem in burns is systemic—an unknown toxin or a changed physiologic condition with the major loss circulatory in character. The first and greater problem of treatment is associated with the care of shock and circulatory replenishment—keeping up the supply of water, and transfusion of blood to meet the needs of the system. The care of the wound does not end with covering the denuded surface with new skin, but with the restoration of as perfect function to the damaged member as is possible.

Improved Hospital Service and the Public

Dr. Joseph D. James, Springfield: Many things go to make a happy and satisfied patient. The expressed friendly interest by the hospital management, the skill of the dietitian, the attitude and personality of the nursing staff, have quite as much to do with making a satisfied patient and family as do the skill and reputation of members of the staff. As to the strictly medical factors, stress is laid on the necessity for the earnest efforts of staff members in meeting the well known requirements of a standardized hospital. Cooperation between a hospital management and a staff that wants to maintain such an institution will inevitably result in a following of satisfied patients and friends.

Differentiation of True Diabetes and Pseudodiabetes

Dr. B. Y. Glassberg, St. Louis: The discovery of insulin has focused attention on the disease known as diabetes mellitus, and many more cases are diagnosed than formerly. Joslin has estimated that one sixth of the persons referred to him because of sugar in the urine do not have diabetes but only a harmless or even transient form of sugar in the urine. A modification of the long used dextrose tolerance test, as to both technic and interpretation, is described as the best available method of differentiation. It is believed that this method offers accuracy as great as that of any of the commonly used laboratory methods. Special attention is drawn to the fact that sugar may be found in the urine regardless of the concentration at which it is present in the blood. The converse also is true: even though the sugar content of the blood is abnormally high, there may be no sugar in the urine. An examination of the blood is urged as the only accurate method of diagnosing diabetes, of differentiating the forms here labeled as true diabetes and pseudodiabetes.

Sinus Disease

Dr. Evan S. Connell, Kansas City: The sinuses are classified by most writers into an anterior and a posterior group, the frontals, anterior ethmoids and maxillaries comprising the former, the posterior ethmoids and sphenoids the latter. Sinus disease is classified, from the pathologic point of view, into catarrhal, purulent and hyperplastic, and etiologically into bacterial, allergic, nutritional and endocrine.

Influenza, the exanthems and the common head cold produce most of the bacterial invasions. Allergic sinusitis has become a favorite field of investigation in recent years, and there is danger of everemphasizing this condition. The chief excitants of this type of sinusitis are inhalants, foods and bacteria. Endocrine dysfunction is a factor in some cases of sinusitis; nutritional sinusitis is due for the most part to lack of vitamin A in the diet.

Pain is not a necessary concomitant of sinusitis: many cases have been unrecognized because the patient was free of pain. Postnasal discharge is almost always due to sinusitis. The exceptions in my experience have been infected adenoids, syphilis and malignant conditions.

The sinuses are frequently a source of focal infection, producing such lesions as arthritis, neuritis, bronchosinusitis, colitis, vasomotor rhinitis, choroiditis, retinitis and impaired hearing. A chronic sinusitis which is causing some breakdown of the general economy of the individual should be surgically drained. The appropriate treatment of all acute nasal infections would reduce materially the incidence of chronic sinusitis. Paranasal sinuse infections are increasing in our population. Systemic infections are frequently disseminated from the paranasal sinuses. Chronic sinusitis is a preventable disease. Treatment of sinus disease is not the hopeless problem that many would have us believe, and surgery is an important factor in this treatment.

Thymic Deaths

Dr. Harry M. Gilkey, Kansas City: The tragic suddenness with which thymic death occurs leaves a deep impression on all concerned in the death, particularly when it follows some trivial operation, such as circumcision or tonsillectomy. It is significant that the thymus occurs in the higher vertebrates, reaches its maximum size during early life, and undergoes retrogressive changes at maturity. One would assume that the thymus must have some relation to the functions of growth and development. In spite of the immense amount of energy and labor directed toward the solution of the problems concerned in the anatomy and physiology of the thymus, no uniform agreement has been reached by the various investigators. Status lymphaticus is a condition in which the most important anatomic characteristics are hyperplasia of the lymphatic tissues and thymus, a small heart and narrow vessels. Such individuals are subject to sudden death.

The thymus in its normal anterior mediastinal location is situated so that it covers the base of the heart and great vessels and is in intimate anatomic relation with such important nerves as the vagus, phrenic and inferior pharyngeal. Its weight in the new-born infant is 13 Gm. It is known that it increases in size until puberty, when its average weight approximates 30 Gm. It is most probable that the thymus possesses a regulatory or metabolic influence on growth and development and is interrelated with the endocrine system. Thymic hyperplasia with or without objective symptoms is potentially dangerous to life.

The most constant and striking symptom in thymic hyperplasia is dyspnea, which may be permanent or intermittent.

The stridor is more often inspiratory, though it may be expiratory or both. It may vary in degree from a gurgling or a crowing sound associated with the respiratory effort to severe paroxysms or choking, which may terminate fatally. The cause of dyspnea is variously attributed to the more mechanical obstruction by the enlarged gland to its intimate relation with and pressure on the heart, great vessels and respiratory nerves, to some abnormal or hyperfunctional activity of the gland exerting an influence on the respiratory centers, or a combination of these causes.

The function of the thymus has not been proved. Presumptive evidence classes it with endocrines. Thymic hyperplasia occurs in a large proportion (from 40 to 50 per cent) of infants. It represents a protential danger to life, particularly during the course of acute respiratory infection. Any abnormal respiratory symptom in the new-born or in early infancy should suggest a roentgenogram to determine the possible existence of a hyperplastic thymus. All hyperplastic thymi in infants, whether or not accompanied by symptoms, should be given the benefit of roentgen therapy.

The Problem of the Narcoleptic

Dr. E. S. Smith, Kirksville: The term narcolepsy, coined by Gelineau in 1880, is applied to a clinical entity characterized by an irregularly recurring desire to sleep without apparent cause and by a sudden loss of muscular tonus during laughter and other emotional states with a consequent tendency to fall or collapse regardless of time, place or immediate occupation. The latter phenomenon has been denominated cataplexy. This disease has been regarded for years as a medical curiosity. Doyle and Daniels report sixty-seven cases traced after examination in the Mayo Clinic prior to September, 1930. Janota and Skala first reported the use of ephedrine at the meeting of the Neurologic Society of Prague, June 21, 1930. Narcolepsy becomes under modern living and transportation conditions a problem because of the number of narcoleptic persons who are driving motor cars and engaging in pursuits which make its victims potentially dangerous to others.

Types of Onset in Pulmonary Tuberculosis

Dr. E. E. Glenn, Mount Vernon: Until recent years the onset of pulmonary tuberculosis has been considered gradual or insidious in practically all cases. The first lesion was believed to appear in the apex of the lung and by a slow process extend downward. During the past few years, the opinion of many clinicians has changed in regard to the type of onset and the character of the initial lesion usually present. It has been proved that the initial lesion has an acute pneumonic character in many cases; its appearance is often accompanied by acute symptoms, or the acute symptoms appear soon after the beginning of the lesion. The acute symptoms often resemble influenza or some other acute respiratory disease. The initial lesion usually appears in the subapical region but may appear in other parts of the lung and may be lobar in extent.

The histories of 200 patients with pulmonary tuberculosis at the Missouri State Sanatorium have been studied together with the roentgenograms made at the time of their admittance, to gain information concerning the type of onset, clinical course and the extent of the pulmonary lesion. The patients may be placed in three groups when the onset and course of the disease is considered: (1) those with an acute onset, ninety-five, or 47.5 per cent; (2) those with an insidious onset with later acute exacerbations, fifty-six, or 28 per cent; (3) those with an insidious onset and course, forty-nine, or 24.5 per cent. This classification is the same as that used by Douglas, Pinner and Walepor, and the statistics are much the same. Also, it was found that the duration of illness of those with disease minimal in extent was more than twice that of those with disease far advanced in extent, which indicates that tuberculous disease which has a tendency to spread usually does so comparatively fast.

Twenty-four patients in the group had a nodular apical type of disease, which was formerly thought to be the forerunner of extensive disease. These patients have shown no evidence of active disease, and serial roentgenograms have shown no change in the lesions. On the other hand, the subapical or lobar types of lesions are very unstable and rapidly progress or retrogress. Disease beginning with acute infiltrations usually responds well to rest and compression therapy if instituted *soon after onset;* hence the great importance of early diagnosis.

Advances in Etiology and Treatment of Suppuration of Lungs

Dr. H. I. Spector, St. Louis: This paper consists of a review of the literature on acute and chronic suppuration of the lungs, with a clinical, bacteriologic and roentgenographic study of eighty-three cases. Recent experimental and clinical evidence strongly suggests the possibility that the various forms of suppuration of the lungs may merely represent different phases of the disease fusospirochetosis. Recent investigations seem to suggest the possibility that mouth anaerobes, particularly spirochetes and fusiform bacilli, play a considerable part in the production of bronchopulmonary lesions. Until recently, surgery occupied a prominent place in the treatment of suppuration of the lungs, especially in the treatment of abscesses. A review of the more recent literature impresses on one the thought that now conservative medical treatment is gradually becoming the preferred treatment. The majority of writers, in discussing the use of the arsenicals, omit mention of dosage, frequently of administration, or reasons for favorable or unfavorable results. Some content themselves with the statement that the dosages used are the same as in syphilis, while others advocate intensive doses, such as from 0.6 to 0.9 Gm. of neoarsphenamine. Large doses do more damage than good, while small doses prove effective. Of eighty-three cases of acute and chronic suppuration of the lungs, twenty-five were treated with small doses of neoarsphenamine, from 0.05 to 0.15 Gm., and of these 80 per cent were either cured or improved.

Surgical Rest and Compression for *Pulmonary Tuberculosis*

Dr. Earl C. Padgett, Kansas City: If one grants that pneumothorax does not in the strictest sense fall in the category of surgical collapse, there remain two strictly surgical procedures, namely, phrenicectomy and extrapleural thoracoplasty, on which one may base a discussion of the rationale, indications and results of surgical collapse. The other rarer surgical procedures, such as section of the scaleni, intercostal neurectomy and pneumolysis, although of some use occasionally, need only to be touched on in passing. The rationale of surgical collapse is largely explained on the basis of rest of inflamed pulmonary tissue plus the mechanical factor of cavitation collapse. Although the therapeutic results are directly proportionate to the degree of rest and collapse, the results obtained by partial rest and partial compression of a diseased lung have caused the operation of phrenicectomy to be used in a growing number of situations, both as an independent procedure and as a complementary one.

In basal tuberculosis, phrenicectomy is of immense assistance in arresting the disease. In unilateral tuberculosis of the productive type, probably 50 per cent are assisted toward a cure. As an accessory to certain types of incomplete pneumothorax, after a pneumothorax is discontinued, or to prolong the refill interval of pneumothorax, the operation is of value. The operation is indicated preliminary to thoracoplasty; and in certain instances of hemoptysis and pain due to adhesions, the symptoms may be removed.

In general, there are three indications for extrapleural thoracoplasty, which are as follows: 1. Pulmonary tuberculosis of the predominantly fibroid type, often with but also without cavitation, with the active lesion limited to one lung, is the classic situation for the operation. In this group fall the favorable, the doubtful and the unfavorable cases. 2. The second indication follows unsatisfactory pneumothorax and includes cases with an adherent upper lobe which prevents apical compression or those with a band of adhesions preventing collapse of some essential area. 3. The third indication occurs after a tuberculous empyema of one variety or another has developed.

On an otherwise hopeless group of individuals, the prognosis of extrapleural thoracoplasty may be briefly summarized as follows: About one tenth fail to recover from the operation. About one half become clinically free from symptoms and are restored to work, and another one third are improved. The remainder die from the progress of the disease.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

2: 155-276 (May) 1932

*Adenomyoma (Endometrioma) of Umbilicus. H. Spitz, Nashville, Tenn.—p. 155.
*Specificity of Bacterial Allergy. W. T. Vaughan, Richmond, Va. —p. 179.
*Active Immunization Methods Against Acute Diffuse Peritonitis. B. Steinberg, Toledo, Ohio.—p. 187.
*Relative Value of Cultural Methods and Guinea-Pig Inoculation in Diagnosis of Tuberculosis. T. B. Magath and W. H. Feldman, Rochester, Minn.—p. 199.
*Dysplastic Granulocytemia. A. Weiss and A. A. Goldbloom, New York.—p. 229.
Classification of Leukemias. A. S. Rubnitz, Omaha.—p. 243.
Separation from Blood Glucose of Two Non-Glucose Reducing Substances. R. J. Pickard, San Diego, Calif.—p. 255.

Adenomyoma of Umbilicus.—Spitz reports an additional case of adenomyoma of the umbilicus. The geographic distribution of all the cases heretofore reported is given and the cases are arranged in chronological order. Age, menstrual history, marital state, number of pregnancies, the association of other tumors and previous operations of each case are considered. Clinical symptoms, such as pain, swelling, discoloration, discharge and size of growth are tabulated; as are also the histologic observations in regard to the endometrial-like glands, smooth muscle, sweat glands and other constituents of the growth. Some of the various theories of origin are considered. Those cases showing definite cordlike attachments or other direct evidence of attachment to the peritoneum are discussed in connection with the serosal theory of origin.

Specificity of Bacterial Allergy.—Vaughan states that the knowledge of clinical bacterial allergy and vaccine treatment is still quite obscure on many points. The factors that enter into the reaction are certainly more complex than those of pollen or other inhalant allergy, apparently owing primarily to the fact that while with the latter one is dealing with an extrinsic allergen which is absorbed into the system only on occasion, with the former one is dealing with an extrinsic allergen which is constantly present. It appears to be its presence and activity in the body that is responsible for the tuberculin type of reaction, a phenomenon whose explanation will help much in the understanding of bacterial allergy. One is dealing not alone with an antigen-antibody reaction but also with a concomitant specific infection. Successful treatment must therefore do more than merely desensitize against the specific allergin; it must also in some way eradicate the focus of living organisms which are responsible for the continuation of the reaction between themselves and the tissues of the host. The evidence to date indicates that bacterial desensitization is a rational procedure; and therapeutic results in appropriate cases, while not spectacular, justify the procedure.

Immunization Against Acute Diffuse Peritonitis.—According to Steinberg, heat-killed colon bacilli used as intraperitoneal vaccine can induce a protection against a colon bacillus peritonitis equal to that of living bacteria. However, in fecal peritonitis the living colon bacilli confer a greater protection than heat-killed organisms. It is assumed that this difference is due to a greater antigenic value of living bacteria. Because animals vaccinated with colon bacilli survive fecal peritonitis (feces contain many species of bacteria), the immunity is considered, at least in greater part, nonspecific. The protection against acute diffuse peritonitis is of a twofold nature: a general immunity and a coincident presence of phagocytes in the peritoneal cavity with a consequent phagocytosis. The active general immunity can be evaluated as 35 per cent and the local phagocytosis as 65 per cent under the conditions of these experiments. The greater number of these phagocytes are polymorphonuclear in type. This general immunity is apparently sufficient to protect animals by the subcutaneous route against a colon bacillus peritonitis.

Cultural Methods in Diagnosis of Tuberculosis.—Magath and Feldman call attention to the fact that several recently devised methods of cultivating Mycobacterium tuberculosis are excellent and can be expected to yield a high percentage of growth in material in which the organism can be demonstrated in direct smear. When bacilli of tuberculosis cannot be demonstrated in direct smear in clinical material, fewer growths will be obtained on culture than can be obtained by inoculation of guinea-pigs. Although most acid-fast bacilli that grow on these special mediums will without doubt be virulent bacilli of tuberculosis, the only way positively to prove virulence and identify species is by inoculation of animals. For this reason, positive cultures are no more final than the finding of acid-fast bacilli by direct smear. The authors believe that while cultural methods are valuable and should be frequently used for demonstrating tubercle bacilli, inoculation of guinea-pigs remains the best method for proving the presence of virulent Mycobacterium tuberculosis in clinical material that is either known or not known to contain acid-fast bacilli.

Dysplastic Granulocytemia.—Weiss and Goldbloom describe a case which demonstrates a symptom complex somewhat similar to that already described by Schultz and others as agranulocytosis. Detailed scrutiny of the case, however, revealed definite basic differences. The term dysplastic granulocytemia was suggested to designate this idiopathic affliction occurring in an apparently healthy individual. It is characterized by a primary involvement of the granulopoietic system with the resultant production and distribution of imperfectly constructed neutrophils. Although the polymorphonuclears dropped to 3 per cent and the leukocytes to 700 during the course of illness, granulocytes were always present, amounting to between 32 to 93 per cent of the cells. Such being the case, the term agranulocytosis cannot fit. Notwithstanding the fact that the leukocytes rose to 40,400 and the neutrophils to 93 per cent, and no intercurrent infection apparently intervened, the patient died. Instead of a small anal gangrenous condition improving with the return of the neutrophils, it gradually grew larger. Heretofore all the cures in cases of agranulocytosis have been attributed to the return of the granulocytes, whereas in this case a marked leukocytosis did not prevent death. The death in this case can be explained only by the inability of the neutrophils, although present in larger numbers, to assume their normal function because of an inherent deficiency in their formation. It is because of these differences that the authors believe that the term dysplastic granulocytemia is more suitable for that group of cases that may fall within the description they give. They feel that a careful morphologic examination of future cases will tend to show that many of the patients presumably suffering with the agranulocytic syndrome are in reality examples of dysplastic granulocytemia.

American Review of Tuberculosis, New York

25: 577-672 (May) 1932

History of the Rl Strain of Tubercle Bacillus. L. U. Gardner, Saranac Lake, N. Y.—p. 577.
*Protest Against Conception of Arrest in Pulmonary Tuberculosis as Outlined by Classification of the American Sanatorium Association. L. H. Fales, Livermore, Calif.—p. 591.
*Scaphoid Scapula and Pulmonary Tuberculosis: Survey of Three Hundred and Twenty-Five Cases at Missouri State Sanatorium (1930). H. A. Kemp, Dallas, Texas.—p. 602.
Comparison of Tissue Reactions to Testicular Inoculation of Acid-Fast Bacilli. E. R. Long and A. J. Vorwald, Chicago.—p. 614.
*Rest Treatment of Nontuberculous Pulmonary Abscess. H. H. Cherry, Waverly Hills, Ky.—p. 634.
Treatment of Pleural Effusions Complicating Artificial-Pneumothorax Therapy. J. P. Nalbant, Northville, Mich.—p. 650.
Metaphen-in-Oil in Treatment of Pleural Effusions Complicating Pneumothorax. I. E. Rudman and R. T. Ellison, Philadelphia.—p. 661.

Conception of Arrest in Pulmonary Tuberculosis.—Fales calls attention to the fact that the present classification of pulmonary tuberculosis by the American Sanatorium Association has never been satisfactory on account of its ambiguousness; and, owing to the advances made in the knowledge of pulmonary tuberculosis during the last ten years, it is doubly unsatisfactory. On account of the latency of pulmonary tuberculosis and the well being of patients following rest, without corresponding changes in the anatomic condition of the lungs, lack of constitutional symptoms should receive but slight consideration in determining an arrest. On the other hand, constitutional symptoms, if found to be due to tuberculosis, may *be considered an expression of activity. As it seems to have* been conclusively demonstrated that physical signs, especially râles, are of no value in determining progression and retrogression of a tuberculous lesion, it follows that they have no place in a schema of classification. The roentgen ray must be considered the main reliance in determining an arrest or a healed lesion and should receive this place of prominence in a schema of classification. When, by the comparison of serial roentgenograms at quarterly intervals, a lesion is found hard and fibrosed, and it has remained stable for six months, the author considers that an arrest has been attained, provided an additional six months is passed with carefully graduated exercise and observation without reactivation of the disease. A future schema of classification should take into consideration the type of tuberculosis present, not merely the extent of the lesion. This is highly essential, not only as a guide for prognosis and treatment but for affording a common nomenclature for the clinician, roentgenologist and pathologist.

Scaphoid Scapula and Pulmonary Tuberculosis.—Kemp gives a tabulation of the age incidence of scaphoid scapula in 325 cases of pulmonary tuberculosis and offers evidence that scaphoid scapula is a criterion of a constitutionality peculiarly susceptible to tuberculosis. The age incidence of scaphoid types in the first two decennia of life was found to be remarkably higher in percentage occurrence than published reports for normal or "well" groups. The incidence of scaphoid types in the third decennium was not so greatly increased as in the first two age groups but was definitely higher than that reported for normal or well groups for the same age period. Scaphoid and mixed types seem to be more susceptible to tuberculosis, since they were found in the majority in the hospital groups, while the convex types seem to be more resistant, since they were found in the majority of the convalescent cases.

Rest Treatment of Nontuberculous Pulmonary Abscess.—According to Cherry, early and prolonged treatment of pul*monary abscess results in permanent* healing in a much larger number of cases than generally considered. Abscess engrafted on bronchiectasis, abscess due to Friedländer's pneumobacillus, or chronic abscess due to any cause responds poorly to this mode of treatment. Multiple abscesses heal not unlike single abscesses on rest therapy. Rest treatment, uneventfully carried out, leads to one of two things: (1) cure of the abscess or (2) improvement of the patient's condition so that operative hazards are the fewest.

Annals of Internal Medicine, Ann Arbor, Mich.

5: 1221-1336 (April) 1932

*Relation of Intestinal Tract and Diet to Treatment of Arthritis. R. Pemberton and E. G. Peirce, Philadelphia.—p. 1221.
*Toxic Granulocytopenia, Purpura Hemorrhagica and Aplastic Anemia Following the Arsphenamines. A. B. Loveman, Ann Arbor, Mich. —p. 1238
Ascending Paralysis Resulting from Drinking of "Jamaica Ginger": Clinical Study of Fifty Cases. D. H. Werden, Los Angeles.—p. 1257.
*Peripheral Vascular Diseases: Treatment with Acetylcholine Hydrochloride. W. C. Waters, Atlanta, Ga.—p. 1267.
*Metastatic Malignant Tumors of Brain. H. F. Dunlap, Rochester, Minn.—p 1274.
Ephedrine in Treatment of Narcolepsy. H. A. Collins, Des Moines, Iowa.—p. 1289.
Typhus-Like (Spotted) Fever from Tick Bite: Rocky Mountain Spotted Fever Type; Identified with a Symbiont Proteus-Like Septicemia. N. Toomey, Palmyra, Mo.—p. 1296.
Postpneumonic Lung Abscess Resembling Lung Tumor: Case Report. G. F. Cooper, Canacao, Philippine Islands.—p. 1308.
Modern Conception of Retinal Detachment with Its Relation to Internal Medicine. C. A. Clapp, Baltimore.—p. 1313.
How to Obtain More Autopsies. D. S. Pulford, Woodland, Calif. p. 1315.

Intestinal Tract and Diet in Arthritis.—Pemberton and Peirce believe that dietetic therapy affords the sine qua non of successful treatment in a large number of cases of arthritis. Such therapy should be applied, however, in appropriate cases only, and on the basis of a familiarity with the principles concerned and with limiting factors to which references are given. Under conditions of undernutrition approaching starvation, not only may the active symptoms of the disease subside but there may be also, occasionally, an absorption of detritus or pathologic exudate in or around joints nearly or quite ankylosed, which reduces the amount of limitation to motion imposed by the existing fibrous contractures. In suitably selected cases the *gain so achieved, though necessarily of small extent* because of bony impingements and the like, may have great significance for the activities of the patient. Persons with atrophic and hypertrophic arthritis have experienced sharp improvement on low calory diets from which all vitamins were definitely excluded. While in no way negativing the rôle of the vitamins in relation to the rheumatoid syndrome as a whole, it is clear that the reduced food intake and not the presence of vitamins primarily determined the immediate and sharp benefit observed.

Toxic Granulocytopenia, Following the Arsphenamines.—Loveman reports five cases of various types of bone marrow depression following the arsphenamines. He believes that the term "agranulocytic angina" is inadequate and misleading and suggests that granulocytopenia is a better term. Inorganic arsenic, organic arsenic and benzene may each depress any or all of the elements of the bone marrow. In the blood dyscrasias following the arsphenamines, the arsenic and benzene radicals are probably both responsible. A predisposed hematopoietic weakness or insufficiency which in any case may be erythropoietic, thrombocytopoietic or any combination of these, is perhaps an important secondary factor in the etiology of diseases of the bone marrow following arsphenamine administration. A syphilotoxic factor affecting the bone marrow is suggested as a possibility in the etiology of the blood dyscrasias in syphilitic persons. The most adequate treatment is prophylactic. Sodium thiosulphate and frequent small blood transfusions offer the best means at present for combating the condition.

Peripheral Vascular Diseases.—Waters treated three patients having trophic lesions due to vascular disease of the extremities by means of intramuscular injections of acetylcholine hydrochloride. Healing of gangrenous areas, relief of pain and elevation of the surface temperature to a higher level was obtained by the use of the drug. In one case, pulsations in the peripheral arteries were reestablished. In from one to *three hours following an injection, the cutaneous temperature* in the affected parts was increased from 2 to 5 degrees C. This elevation lasted from eighteen to twenty-four hours and was accompanied by a sense of warmth and relief of pain in the extremities. The advantages of the use of acetylcholine are (1) the ease of its administration, (2) the absence of constitutional reactions following its use, and (3) the ability to maintain a constant and uniform elevation of the surface temperature by frequently repeated injections.

Metastatic Malignant Tumors of Brain.—Dunlap reports that the incidence of metastatic tumor of the brain is at least 5 per cent of all tumors of the brain observed at the Mayo Clinic. There are focal (masses) and diffuse (encephalitic) lesions in the brain. The primary malignant tumor was in the lung, breast or kidney in more than 50 per cent of the cases. The primary lesion is frequently silent. Metastatic tumors of the brain often present essentially the same syndrome as primary tumors of the brain. All cases presenting clinical evidence of a tumor of the *brain should be studied carefully for* evidence of primary malignant tumor outside the central nervous system. In all cases in which there is clinical evidence of tumor of the brain, roentgenograms of the thorax and skull, for evidence of metastasis, should be made as a routine. Choked disks occurred in 40 per cent of the cases of metastatic tumor of the brain. Multiplicity of lesions, and consequent dissemination of signs, may lead to the assumption that the cerebral manifestations are the result of inflammatory disease. Mental symptoms, especially of a stuporous or confusional type, occurred in more than 50 per cent of the cases. The incidence and intensity of mental symptoms in this series of cases appeared to bear some relationship to the incidence of the encephalitic changes.

Annals of Surgery, Philadelphia

95: 641-800 (May) 1932

Repair of Cleft Palate, Concerning Palatine Insertion of Superior Constrictor Muscle of Pharynx and Its Significance in Cleft Palate, with Remarks on "Push-Back Operation." G. M. Dorrance, Philadelphia. —p. 641.
Preoperative and Postoperative Care of Congenital Clefts of Lip and Palate. E. A. Kitlowski, Baltimore.—p. 659.
Transthoracic, Extrapleural Thoracotomy. G. de Tarnowsky, Chicago. —p. 667.
*Pulmonary Abscess. L. W. Frank, Louisville, Ky.—p. 675.
Phrenicectomy in Treatment of Pulmonary Tuberculosis. E. Bonme, New York.—p. 683.
*Repair of Intestinal Fistulas. H. L. Baker, Chicago.—p. 687.
*Intestinal Fistulas: Method for Preventing Digestion of Skin. E. B. Potter, Ann Arbor, Mich.—p. 700.
Prevention of Fecal Fistula After Appendectomy: Simple Ligation Versus Precarious Purse-String. J. F. Baldwin, Columbus, Ohio.—p. 704.
Congenital Unilateral Renal Agenesia. D. C. Collins, Rochester, Minn. —p. 715.
Injection Treatment of Varicose Veins. K. M. Lewis, New York.—p. 727.
*Sodium Morrhuate as Sclerosing Agent in Treatment of Varicose Veins. I. S. Tunick and R. Nach, New York.—p. 734.
Varicose Veins and Their Treatment, with Study of Three Hundred and Fifty-Four Cases. D. R. Jensen, New York.—p. 738.
*Varicophlebitis and Injection Treatment. L. Jacques, Chicago.—p. 746.
*Relation of Chronic Varicose Ulcer to Epithelioma, Based on Records of Over One Thousand Chronic Leg Ulcers. J. Tenopyr and I. Silverman, Brooklyn.—p. 754.
Problem of Delayed Union and Ununited Fracture. H. R. Owen, Philadelphia.—p. 759.

Pulmonary Abscess.—Frank presents a study of forty-nine cases of lung abscess occurring during the past seven years. He excluded from consideration those cavitations due to tuberculosis and bronchiectasis. Likewise, he did not consider those due to the aspiration of a foreign body, or those due to various types of infection, such as actinomycosis, or pulmonary suppuration resulting from bronchial obstruction due to new growth. A study of the forty-nine cases reveals the fact that eighteen of them, or 36 per cent, followed some type of surgery. Thirteen cases developed in the course of pneumonia, and in twelve cases the cause of the pulmonary suppuration could not be determined. Two cases occurred in infections of the blood stream, and in these the abscesses were small and multiple and were not discovered until necropsy. Two cases resulted from so-called influenza; one was due to actinomycosis and one to an aspirated foreign body. As to the sex distribution, thirty-two occurred in males and seventeen in females. This agrees approximately with the usual incidence as given by most writers on the subject. In those cases occurring as a postoperative complication of the eighteen cases in this group, the abscess was located on the right side twelve times as compared with six times in the left lung. Sixty-six per cent of these cases occurred between the ages of 20 and 40. The distribution was as follows: 10 to 20, two; 20 to 30, nine; 30 to 40, three; 40 to 50, two; 50 plus, two. When one considers the number of tonsil operations done on children, it is surprising that more cases do not occur in the earlier decade. Such observation leads to the conclusion that it is not the aspiration of blood alone which is the causative factor in the production of pulmonary abscess. It is the author's belief that the high incidence of lung abscess in the middle period of life is probably due to the fact that at that time one finds dental infections most common. Children rarely have pyorrhea or infected teeth; hence the low incidence of the disease in the first decade. Of the eighteen cases in which the abscess followed surgical procedures, seven were due to tonsillectomies and eleven to other types of surgery, one a mastoid, another following drainage of a cervical abscess. In every case a general anesthetic was employed and in all some ether was given.

Repair of Intestinal Fistulas.—According to Baker, the treatment of intestinal fistula concerns itself chiefly with the location and chronicity of the lesion. In fistulas arising from the duodenum and lower jejunum, the blood chlorides and body fluids, as well as body nutrition, are of prime importance, and measures should be directed to furnishing chlorides in the form of physiologic solution of sodium chloride, and nutrition in the form of dextrose, by hypodermoclysis, by rectal infusion, or by both methods. The fistula itself should not be treated by direct suture. In fact, so many failures have been reported that a conservative attitude should be employed. The skin and operative wound should be protected as well as possible, and this may be done with a liquid adhesive plaster, kaolin, or other ointments, and the sinus tract itself may be plugged with a modified Beck's paste. The pancreatic secretions may be activated by the use of an acid medium, and continued suction of the wound may be advantageous. The treatment in this type of fistula is one of prevention, as many of them follow cholecystostomy or transduodenal removal of biliary stone. Care in breaking up adhesions about the gallbladder with immediate repair of injury to the duodenum, as well as careful suturing of operative incisions in the duodenum, will greatly lessen the incidence of this serious condition. Fistulous tracts in the ileocecal region are more favorable for operative treatment than in any other region. The intestinal contents are not highly infective; the peritoneal cavity shows a resistance to infection, and healing of the repaired viscera usually takes place. In the lower abdominal tract, as many of these fistulas arise as a result of removal of adherent organs, gentleness during operative procedures and repair to the traumatized intestine will greatly reduce this condition. During the acute stage of fistula formation the treatment is, of course, directed toward the local or general peritonitis, whichever is present. Many of these fistulas close spontaneously, and here too the tract may be injected with a modified Beck's paste and obliteration of the sinus may result. In the chronic type, however, operative procedures are a formidable undertaking because of the dense adhesions present and the involvement of other organs by these adhesions. In the lower sigmoid, a colostomy is often advantageous after the repair has been made. The colostomy may be closed several weeks later, and this procedure promises the best results in this type of fistula. The incidence of peritonitis following the operative repair is not so great as one would expect and is probably the result of protective processes that have arisen from inoculation to the peritoneal cavity by the infected fecal current of the sinus.

Intestinal Fistulas.—Potter abandoned, some time ago, any attempt to protect the skin around an intestinal fistula by medicated dressings or mechanical covering, since these frequently shut off from contact with the air a surface that would be better air dried. He now prevents or minimizes digestion and ulceration of the skin by keeping the irritating discharge from coming in contact with the skin about the stoma. The area is cleaned off with alcohol and dried, and no medication or dressing is applied. A continuous suction apparatus (centrally controlled) is used during the hours when the patient is awake. A glass-tipped rubber tube, in the hands of the patient himself, has proved to be the most satisfactory method of applying this suction, since plugging of the tube or cessation of the suction is immediately discovered and may be corrected. This plan also provides the patient with an occupation which, though not exactly pleasant, stimulates his interest in his progress and makes him a much better attendant than average nursing care affords. The difficulty with this form of treatment has been that during the hours of sleep the discharge collects on the skin, and in a few hours digestion and erosion have occurred, vitiating the result of a day's careful attention. This problem the author has found to be excellently cared for by placing the patient on an anterior Bradford frame with a slit opening in the region of the fistula. A bedpan, placed beneath the opening on the bed, serves as a receptacle for the discharge. Within a short time patients accustom themselves to such a frame and sleep comfortably through the night, as well as during a rest period in the day, with ideal care of the fistula requiring no conscious effort on the part of patient or attendants. The dependent position of the fistula, in most cases, tends to produce some degree of prolapse of the intestinal mucosa, so that the opening in the intestine is some distance from the skin surface. The fistula then assumes somewhat the character of a well made colostomy, with the actual opening in the intestine far enough below the skin surface to prevent soiling of the skin as long as the patient lies in a prone position.

Sodium Morrhuate for Varicose Veins.—Tunick and Nach call attention to the fact that sodium morrhuate does not produce cramp or pain following its injection for varicose veins. It is apparently not destructive to tissues and therefore least likely to produce tissue necrosis or slough if injected outside the vein. It produces a firm obliteration of the vein with little periphlebitis. It is not toxic. The dose is from 1 to 5 cc. of the 5 per cent solution, the average dose being 2 cc.

Varicophlebitis.—Jacques presents clinical evidence pointing to the existence of resting infection in the walls of varicose veins. The dangers of the injection treatment of varicose veins arise in part from the lighting up of such infection, with resulting ascending thrombophlebitis and embolism. Evidence of the presence of latent infection in the veins of one extremity should call attention to the likelihood of stirring up such infection in the opposite extremity. The development of adequate methods of detecting latent infection will aid in eliminating an important source of danger associated with injection therapy.

Relation of Chronic Varicose Ulcer to Epithelioma.—Tenopyr and Silverman report that nineteen cases of epithelioma of the lower extremities occurred at the Kings County Hospital for the period of 1921-1931, inclusive. Over 1,000 chronic leg ulcers were admitted during the same period. Only four cases of epithelioma were found among these arising on the sites of such ulcers that had been present for from ten to twenty years. The weight of evidence, therefore, is strongly against the common belief that chronic ulceration over prolonged periods plays an important part in the causation of cancer.

Archives of Pathology, Chicago

13: 543-690 (April) 1932

*Medial Degeneration in Aorta of Rabbit Produced by Diphtheria Toxin. G. L. Duff, Toronto, Canada.—p. 543.
*Primary Pulmonary Tubercle Appearing in Patient with Advanced Hodgkin's Disease. H. C. Sweany, Chicago.—p. 558
Experimental Pathology of Liver: VI. Restoration of Liver in White Rats After Partial Removal and Splenectomy. G. M Higgins and J. T. Priestley, Rochester, Minn.—p. 573.
*Action of Antileukocytic Serum on Tissue Cultures. W. C. Hueper and M. A. Russell, Philadelphia.—p. 584
Experimental Production of Glomerulonephritis in Rabbit. H. F. Helmholz, Rochester, Minn.—p. 592.

Medial Degeneration in Aorta of Rabbit Produced by Diphtheria Toxin.—Duff reports that successive intravenous injections of diphtheria toxin in suitable quantities produce in rabbits severe medial degeneration of the aorta and its large branches within from eight to fourteen days. Damage to the arteries is probably the result of the direct toxic action of diphtheria toxin on the media. The changes in the media are most marked in the arch and thoracic portion of the aorta, resulting in thinning of the arterial wall, dilatation and the formation of aneurysmal sacs. With the establishment of calcification, transverse fissures appear on the intimal surface. The lesion commences in the middle third of the media, primarily as a cloudy swelling, degeneration and necrosis of muscle fibers. Fatty changes occur in the process, at least in its later stages. Elastic fibers, slightly later, also undergo degeneration with the loss of elasticity and the development of stiffness and rigidity even before the appearance of calcification. Calcification is first seen as a finely granular deposit in the débris of degenerated muscle fibers but later involves also the elastic fibers and becomes most prominent in them.

Pulmonary Tubercle in Hodgkin's Disease.—Sweany describes an extremely early primary pulmonary tuberculous complex occurring near the end of a case of advanced Hodgkin's disease. Two characteristic types of lesions were found in the same body: a small early tuberculous focus in the lungs and adjacent lymph nodes, and advanced Hodgkin's disease in the cervical and peripancreatic lymph nodes, liver and spleen. The lesions in the tissue showing Hodgkin's disease resembled malignant changes of lymphoid cells similar to those originating in the lymph nodes. Only human tubercle bacilli were isolated from the lesions of Hodgkin's disease. No filtrable forms could be demonstrated. The author believes that one is justified in concluding that Hodgkin's disease in the patient studied developed independent of tuberculous infection, and that the theory of a tuberculous origin of the disease is not supported by this case.

Antileukocytic Serum.—According to Hueper and Russell, antileukocytic serum has an antiproliferative and cytolethal effect on leukocytes and other tissue cells of the same species against which the serum has been prepared. Antileukocytic serum has apparently also a slight to moderate antiproliferative effect against leukocytes of a different species. Serum prepared against leukocytes of leukemic chickens is ineffective against human leukemic leukocytes.

Arkansas Medical Society Journal, Little Rock

28: 209-222 (April) 1932

Tularemia: Initial Lesion on Scrotum. M. J. Kilbury, Little Rock, and J. M. Kolb, Clarksville.—p. 209.
Relation of the Physician to the Public, to Each Other and to the Patient. E. E. Barlow, Dermott.—p. 210.
Medical Care of Handicapped Child. A. C. Shipp, Little Rock.—p. 213.

Colorado Medicine, Denver

29: 185-232 (May) 1932

*Symptoms and Diagnosis of Coronary Artery Disease. F. M. Smith, Iowa City.—p. 189.
Should Children Wear Glasses? W. H. Crisp, Denver.—p. 193.
Congenital Absence of Both Clavicles and Malformation of Cranium (Cleidocranial Dysostosis). W. W. Barber and L. D. Buchanan, Denver.—p. 196.
Nervous Indigestion. H. Gauss, Denver.—p. 202.

Coronary Artery Disease.—Smith calls attention to the fact that coronary occlusion has frequently been mistaken for the severe forms of angina pectoris. The character and distribution of the pain may be identical. The pain in coronary occlusion, however, is usually more lasting and may continue for hours or days, even after repeated hypodermic administrations of morphine. The pain is, moreover, ordinarily accompanied or followed by some manifestation of cardiac damage, which is the deciding factor in the diagnosis. The differentiation of angina pectoris from the minor forms of coronary occlusion is extremely difficult, yet highly important from the standpoint of treatment. In every instance in which the pain is more severe than usual or comes on while at rest, the possibility of coronary occlusion should be considered and the patient given the benefit of a period of absolute rest. If in questionable cases the heart is carefully watched for possible changes in the observations, the clinician will occasionally be rewarded by the detection of physical signs that will enable him to establish the diagnosis of coronary occlusion.

Journal of Clinical Investigation, Baltimore

11: 455-646 (May) 1932

Chemical Studies of Blood in High Intestinal Obstruction: I. Distribution of Phosphorus and Intracellular Changes. G. M. Guest and W. D. Andrus, Cincinnati.—p. 455.
*Id.: II. Relation Between "Toxemia" and Chemical Changes. W. D. Andrus, G. M. Guest, R. F. Gates and Alta Ashley, Cincinnati.—p. 475.
*Spinal Fluid in Hypertension. S. A. Shelburne, D. Blain and J. P. O'Hare, Boston.—p. 489.
Influence of Experimental Thyroid Intoxication on Potassium, Sodium and Water Content of Myocardium. E. M. MacKay and H. C. Bergman, La Jolla, Calif.—p. 497.
*Excretion of Xylose as an Index of Damaged Renal Function. Ella H. Fishberg and L. Friedfeld, New York.—p. 501.
*Hypoglycemic Reactions Following Glucose Ingestion. W. S. McClellan and H. S. H. Wardlaw, New York.—p. 513.
Copper and Nonhemoglobinous Iron Contents of Blood Serum in Disease. A. Locke, E. R. Main and D. O. Rosbash, Chicago.—p. 527.
Changes in Circulation Produced by Gradual Occlusion of Pulmonary Artery. J. H. Gibbon, Jr., Mary Hopkinson and E. D. Churchill, Boston.—p. 543.
Studies of Blood Glycolysis: I. Sugar and Phosphorus Relationships During Glycolysis in Normal Blood. G. M. Guest, Cincinnati.—p. 555.
Id.: II. Sugar and Phosphorus Relationships During Glycolysis in Blood of Infants and Children with Various Diseases. G. M. Guest, Cincinnati.—p. 571.
Increased Elastic Tension of Lung in Experimental Pneumonia. C. M. van Allan and C. Wu, Peiping, China.—p. 589.
Excretion of Inorganic Sulphates. J. M. Hayman, Jr., with assistance of Sara M. Johnston, Cleveland.—p. 607.
Mechanism of Nephrotic Edema. R. F. Loeb, Dana W. Atchley, D. W. Richards, Jr., Ethel M. Benedict and Mary E. Driscoll, New York.—p. 621.
*Effect of Ventriculin on Blood Sugar Level in Patients with Pernicious Anemia. S. M. Goldhamer, Ann Arbor, Mich.—p. 641.

Intestinal Obstruction: Toxemia.—Andrus and his associates report that, in dogs with pyloric obstructon, repeated subcutaneous injections of small doses of histamine have the effect of hastening the development of those chemical changes in the blood which have been held by many to be the most important ultimate cause of death. Histamine has been employed as a known substance that is at least closely related to the toxic substances that appear in the contents of a segment of obstructed or strangulated intestine. Histamine, injected subcutaneously as in the experiments, stimulates the flow of gastric juice, and in the presence of vomiting such increased secretion results in more rapid losses of electrolytes and water than occur in animals with simple obstruction; in consequence of this there is a more rapid development of the whole cycle of the symptoms and chemical changes that ordinarily accompany intestinal obstruction. On the basis of their experiments the authors suggest that patients with intestinal obstruction plus strangulation, or dogs with experimental obstruction plus closed loops, die sooner than do those with simple obstruction, not because of any specific general "intoxication" of the body tissues but because the slow absorption of histamine-like substances from the intestine results in an acceleration of the progress of all those chemical changes which occur secondarily to the losses of gastric secretions.

Spinal Fluid in Hypertension.—In a study of fifty cases of hypertensive disease, Shelburne and his associates found that twenty-one of the patients had increased intracranial pressure. Papilledema was almost always associated with increased intracranial pressure. Papilledema and increased intracranial pressure occur more frequently with renal failure but are also found in cases in which renal function is normal. Headache is more frequent in the presence of increased intracranial pressure and papilledema but occurs without either one. The authors' results indicate that lumbar drainage for relief of headache is not justified. Increased intracranial pressure seems more often associated with high diastolic blood pressure, but the two are probably the result of some common factor and neither is caused by the other. The cause of increased intracranial pressure is not accounted for in 50 per cent of the authors' cases which have neither renal insufficiency nor increased venous pressure.

Excretion of Xylose. — Fishberg and Friedfeld use the excretion of xylose as an index of renal function. On ingestion of 50 Gm. of xylose with limited fluid intake, the intact kidney is able to concentrate the xylose of 2.5 per cent within two hours and excretes 25 per cent of the total given within twenty-four hours. Damaged renal function is manifested by concentrations as low as 0.1 per cent and total excretions as low as 1 Gm. The curve of nonfermentable reducing substance in the blood approaches its normal value after five hours with intact kidney function, while in patients with impaired renal function the curve of the nonfermentable reducing substance continues upward so that values of 100 mg. per hundred cubic centimeters and more are encountered. The authors suggest the possibility of the use of xylose for the determination of blood volume and in the quick diagnosis of the functional integrity of single kidneys for surgical purposes.

Hypoglycemia Following Ingestion of Dextrose.—McClellan and Wardlaw made observations of the respiratory metabolism of a patient who on three different occasions developed symptoms of hypoglycemia about four and one half hours after the ingestion of 100 Gm. of dextrose. A review of the conditions that may produce hypoglycemia is presented. In the patient studied, a depression of the blood sugar to the level that resulted in symptoms occurred twice as a result of excessive oxidation of carbohydrate, and once as a result of excessive storage. The blood sugar time curves of five patients were studied and wide variations were found, which depended largely on the diet which the individuals had previously received. The authors believe that the interpretation of every blood sugar time curve should be based on a knowledge of the previous diet.

Desiccated Hog Stomach and Blood Sugar.—Goldhamer states that, in pernicious anemia in relapse, the blood sugar values are usually within the upper limits of normal. The decreased blood sugar values in the beginning of a remission occur at the time of the increase in the percentage of immature red blood cells present in the peripheral circulation. The blood sugar level reaches its lowest value at a time corresponding with the peak of the reticulated red blood cell percentage rise. In early remission the blood sugar level may fall as low as 61 mg. per hundred cubic centimeters. Almost all the values observed by the author were within the lower limits of normal. The onset of hunger symptoms in early remission may be directly associated with the decrease in the blood sugar level, the result of increased metabolic activity of the marrow, the immature red blood cells, or both. With general improvement, the blood sugar values increase and maintain themselves at a level not quite as high as their original one. Desiccated hog stomach has no specific insulin-like properties when taken by mouth. The immediate effect following ingestion of 40 Gm. is a slight increase in the blood sugar value for about half an hour, with a gradual return to its original level.

Journal of Experimental Medicine, Baltimore

55: 683-828 (May 1) 1932

*Maintenance of Normal Plasma Protein Concentration in Spite of Repeated Protein Loss by Bleeding. C. W. Barnett, R. B. Jones and R. B. Cohn, San Francisco.—p. 683.

*Effects of Parathormone and Ammonium Chloride on Bones of Rabbits. H. L. Jaffe, A. Bodansky and J. E. Blair, New York.—p. 695.

Effect of Antitesticular Serum on Enhancement Value of Testis Extract. F. Duran-Reynals, New York.—p. 703.

Races That Constitute Group of Common Fibroblasts: I. Effect of Blood Plasma. R. C. Parker, New York.—p. 713.

*Studies on Common Cold: V. Relationship of Pathogenic Bacteria to Upper Respiratory Disease in Infants. Y. Kneeland, Jr., and Caroline F. Dawes, New York.—p. 735.

*Cytologic Studies on Rheumatic Fever: I. Characteristic Cell of Rheumatic Granuloma. C. McEwen, New York.—p. 745.

Chemo-Immunologic Studies on Conjugated Carbohydrate-Proteins: VI. Synthesis of *p*-Aminophenol α-Glucoside and Its Coupling with Protein. W. F. Goebel, F. H. Babers and O. T. Avery, New York.—p. 761.

Id.: VII. Immunologic Specificity of Antigens Prepared by Combining α- and β-Glucosides of Glucose with Proteins. O. T. Avery, W. F. Goebel and F. H. Babers, New York—p. 769.

Serologic Specificity of Peptides. K. Landsteiner and J. van der Scheer, New York—p. 781.

Reactions of Rabbits to Intracutaneous Injections of Pneumococci and Their Products: VII. Relation of Hypersensitiveness to Lesions in Lungs of Rabbits Infected with Pneumococci. L. A. Julianelle and C. P. Rhoads, New York.—p. 797.

Corneal Reactions to Bacterium Granulosis and Other Micro-Organisms. P. K. Olitsky, R. E. Knutti and J. R. Tyler, New York.—p. 803.

*Purification and Concentration of Diphtheria Toxoid. A. Wadsworth, J. J. Quigley and Gretchen R. Sickles, Albany, N. Y.—p. 815.

Maintenance of Normal Plasma Protein Concentration.—Barnett and his associates describe experiments on five dogs, consisting in the daily removal of blood plasma in amount from 25 to 100 cc., the red cells being returned to the circulation in Locke's solution. In no case was there a significant drop in plasma protein concentration. They report a case of cirrhosis of the liver in which more than 10 Gm. of protein daily was lost in the ascitic fluid during a period of seven months without any lowering of plasma protein concentration. The results of the experiments and the observations in the case of cirrhosis of the liver indicate that the loss of considerable quantities of protein is not alone sufficient to produce lowering of the level of plasma protein, and they suggest that in nephritis of the degenerative type there may be an associated interference with the mechanism of regeneration.

Effects of Parathyroid Extract on Bones.—Jaffe and his associates report that a very large single dose of parathyroid extract produced rapid and extensive decalcification of the bones of a young rabbit. Gradually increased doses of the extract failed to produce significant changes in the bones of young and fully grown adult rabbits. Ammonium chloride, administered by stomach tube, was without effect on the bones when given to rabbits treated with the extract or to otherwise untreated rabbits. Calcium lactate did not promote the appearance of signs of overdosage of parathyroid extract in rabbits during treatment, nor were metastatic calcifications observed in the soft tissues after termination of the experiment. The rabbit is relatively highly resistant to the decalcifying effects of gradually increased repeated doses of parathyroid extract, and therefore is not satisfactory material for experimental studies of bone changes of chronic hyperparathyroidism. The appearance of actively transforming bones of a young growing rabbit, particularly at the sites of rapid growth, is not to be confused with the more severe fibrous processes produced by parathyroid extract in guinea-pigs, dogs and rats.

Common Cold.—Kneeland and Dawes record bacteriologic and clinical observations on respiratory disease in a semiisolated infant population over a period of two years. In two severe winter outbreaks of respiratory infection, a parallel rise in the carrier rate of pathogenic organisms was noted. The first autumn outbreak of colds seems to favor the dissemination of the pathogenic organisms. The relationship of colds to the severer infections is roughly reciprocal. Infants between 8 and 14 months of age are subject to the most severe infections. The number of infants showing positive skin reactions to products of pathogenic organisms increases during the winter months;

Cytologic Studies on Rheumatic Fever.—Scrapings of subcutaneous nodules from ten patients with rheumatic fever were examined microscopically by McEwen after they had been stained with supravital dyes. From the uniform results obtained, the following conclusions were drawn: 1. Supravital staining of cells from these lesions gives information unobtainable with ordinary histologic methods. 2. The scrapings show a great predominance of certain cells almost entirely devoid of phagocytic power and not characterized by the reactions with neutral red which distinguish monocytes, epithelioid cells and clasmatocytes. Hence they differ from the essential cells of the lesions of tuberculosis and experimental syphilis. These differences are probably of a functional and developmental rather than of a genetic nature. 3. The cells probably arise from the undifferentiated mesenchymal elements of loose connective tissue, although it is possible that endothelial cells take part in their formation in some instances. 4. Since there is little doubt that the subcutaneous rheumatic nodules are pathologically identical with rheumatic granulomas elsewhere in the body, these conclusions are considered applicable also to the Aschoff body cells of the myocardial submiliary nodules.

Diphtheria Toxoid.—By precipitation with acetone at 4 C., Wadsworth and his associates obtained a refined diphtheria toxoid as a dry powder, readily soluble in aqueous solutions. The powder itself appears to be stable. When dissolved in half the original volume of physiologic solution of sodium chloride the toxid remained stable, in the cold room, for a period of seven months. Only toxoids should be used which have been completely detoxified by the treatment with solution of formaldehyde. The formaldehyde is immediately and completely removed by precipitation with acetone. Filtration through a Mandler filter or the addition of a preservative did not appear to have any deleterious effect. Incubating at 39 C. and freezing for twenty hours did not impair its activities. The flocculating value of the purified toxoid containing phenol was almost completely destroyed by freezing, whereas it was unchanged when merthiolate was the preservative. Approximately 62 per cent of the nitrogen was eliminated in the process, with approximately 15 per cent loss in flocculating value. The flocculating values were nearly double those of the original material and thus corresponded with the concentration, which was one-half the volume. By this method, the antigenic activity of a toxoid below standard may be increased to a satisfactory standard. The antigenic activity of the refined product in the immunization of guinea-pigs may in general parallel its flocculating values, but the relation between the results of these tests may not be proportional nor constant. As an immunizing agent in the guinea-pig, the refined toxoid posseses an antigenic activity that is equal to, or greater than, that of the unconcentrated toxoid.

Journal of Infectious Diseases, Chicago

50: 281-376 (April) 1932

Respiratory Flora of Eskimos in Remote Northern Regions. J. R. Wells and P. Heinbecker, St. Louis.—p. 281.
Proteins of Ragweed Pollens. C. A. Johnson and B. Z. Rappaport, Chicago.—p. 290.
Standardization of Antimeningococcic Serum by Polysaccharide Precipitin Test. J. Zozaya, Glen Olden, Pa—p. 310.
*Leukocyte Response in Man to Dick Toxin, with Especial Reference to Eosinophil Changes. S. L. Vaughan, Chicago.—p. 315.
*Blood Cultures in Rheumatic Fever. L. E. Cooley, Chicago.—p. 330.
Atypical Lactose-Fermenters Belonging to Genus Bacterium (Bergey): Cultural and Biochemical Reactions. J. A. Kennedy, Priscilla Lees Cummings and Norma Myers Morrow, Rochester, N. Y.—p. 333.
*Rat-Bite Fever Associated with Sporothrix N. P. Anderson, Los Angeles, and Bertha Kaplan Spector, Chicago.—p. 344.
Dissociation in Streptococcus Scarlatinae. Edna Delves, Chicago.—p. 350.
Dissociation of Streptococci. L. E. Cooley, Chicago.—p. 358.
Antigenic Properties of Rabies Virus. L. C. Havens and Catherine R. Mayfield, Montgomery, Ala.—p. 367.

Leukocyte Response in Man to Dick Toxin.—Vaughan describes an experiment in which the leukocytes of the circulating blood of human subjects were studied before and after the injection of immunizing doses of Dick toxin. There were twenty-one persons in the group, of whom eighteen had previously reacted positively to the Dick skin test and three negatively. As controls, a group of eight persons given injections of diphtheria toxoid, including seven who gave positive reactions and one who gave a negative reaction to the Schick test, and a group of four persons who were not subjected to injections were examined. The results of preliminary counts made on the entire series corresponded closely with those generally accepted as normal. Following the first injection a slight leukocytosis was observed in both groups at the end of four hours, which was still present the following day but had disappeared within four days. The change was due, chiefly to an absolute increase in the number of polymorphonuclear neutrophil cells, the lymphocytes remaining at approximately the same absolute level. A preliminary leukopenia was observed in the group given injections of diphtheria toxoid. The basophils and large mononuclears reacted in a manner contrary to that of the neutrophils, with a conspicuous diminution in the average percentage following the injection of the toxin. Individual variations were great. Definite changes were noted also in the number of eosinophils in which a prompt and often progressively increasing rise was seen in the majority of the group given injections of Dick toxin, and a delayed rise in the others of the group. Three persons failed to show noteworthy changes. Analysis of these results showed that the eosinophil reaction had no apparent relation to the intensity of the skin test, to the rash or to the history of an attack of scarlet fever.

Blood Cultures in Rheumatic Fever.—Cooley made blood cultures on twenty-five children between the ages of 6 and 14 who had rheumatic fever. All the cultures were made as early in the disease as possible. It was thought that positive results might be obtained more readily in cultures of the blood of children who were having rheumatic fever for the first time. A history of a previous attack was not obtainable from fourteen of the patients. Each patient had joint involvement at the time the cultures were taken, and each patient had a temperature of at least 100.5 F. (38 C.). Control cultures were made from the blood of ten nonfebrile patients. Brain broth cultures of the blood of the children with rheumatic fever remained sterile for one month. Twelve bottles of broth inoculated with the blood of the first six patients and ten bottles of broth that contained serum remained sterile for one month. Thirty-four of the remaining forty bottles of broth remained sterile for one month. Staphylococci or molds were found in the remaining six bottles. Eighteen of the twenty bottles of broth in the control group remained sterile for one month. Staphylococci were found in the other two bottles.

Rat-Bite Fever and Sporothrix.—Anderson and Spector report a typical case of rat-bite fever, the evidence indicating that a sporothrix-like organism played a part in the attack. As far as the authors know, this is the first time that such an organism has been isolated from a patient with rat-bite fever.

Kentucky Medical Journal, Bowling Green

30: 237-302 (May) 1932

Clinical and Surgical Aspects of Acute Intestinal Obstruction. J. H. Blackburn, Bowling Green.—p. 242.
Reasons Why Thyroidectomy Should Not Be Postponed. J. F. van Meter, Lexington.—p. 249.
Contraception: Review of Indications and Technic. S. D. Breckenridge, Lexington.—p. 253.
Eclampsia: A Preventable Disease. E. Speidel, Louisville.—p. 257.
Head Colds. H. H. Roberts, Georgetown.—p. 261.
Some Points in Treatment of Fractures of Extremities. E. W. Northcutt, Covington.—p. 265.
Gastro-Intestinal Hemorrhage: Report of Three Cases. J. A. O. Brennan, Louisville.—p. 269.
Intussusception in Child Four Months Old. J. W. Bruce, Louisville.—p. 271.
Trichiniasis: Report of Case. H. S. Frazier, Louisville.—p. 272.
Amidopyrine Analgesia With and Without Magnesium Oxide. W. G. Weston, Louisville.—p. 272.
Lead Poisoning: Report of Case. J. W. Bruce, Louisville.—p. 274.
Blindness Following Measles, Continued Report of Case. S. G. Dabney, Louisville.—p. 275.
Carcinoma of Cervix, Impeding Labor: Report of Case. J. G. Sherrill, Louisville.—p. 277.
Paget's Disease of Breast: Report of Two Cases. W. Frank, Louisville.—p. 278.
Surgery of Common Duct. F. P. Strickler, Louisville.—p. 280.
Rabies. R. P. Ball, Harlan.—p. 286.
Pathology of Rabies: Case Report. A. J. Miller, Louisville.—p. 288.
Interesting Case of Chorea. J. H. Pritchett, Louisville.—p. 291.
Unusual Fractures. F. P. Strickler, Louisville.—p. 293.
Interlobar Pleurisy with Serous Effusion. O. O. Miller, Louisville.—p. 295.

Laryngoscope, St. Louis

42: 233-334 (April) 1932

Regulation of Eye Positions and Movements Induced by Labyrinth. F. Lorente de No, St. Louis.
New Tonsil Suture Instrument. G. Ainslie, Portland, Ore.—p. 333.

Michigan State M. Society Journal, Grand Rapids

31: 301-362 (May) 1932

The Super-University. A. G. Ruthven, Ann Arbor.—p. 301.
Cancer Control in Michigan. F. L. Rector, Evanston, Ill.—p. 305.
Rôle of Amino-Acids in Animal Organism: II. Physiology of Amino-Acids: Beaumont Foundation Lecture II. H. B. Lewis, Ann Arbor.—p. 307.
Service for Ambulatory Diabetic: D. W. McLean, with assistance of Eleanor J. Ford and Martha A. Alderman, Detroit.—p. 314.
Retinal Tears at Ora Serrata. P. C. Kronfeld, Chicago.—p. 319.
Diffuse Hypertrophy of Breasts: Preliminary Case Report. M. Burnell, Flint.—p. 324.
Pigmentation and Keratosis Following Use of Arsenic: Report of Case. N. A. Aronstam, Detroit.—p. 326.
Brain Abscess and Lateral Sinus Thrombosis as Complication in Mastoiditis: Report of Two Cases. A. P. Wilkinson, Detroit.—p. 327.
Photographs of Fundus Oculi. F. L. Ryerson, Detroit.—p. 330.
Traumatic Rupture of Pancreas: Report of Case. H. K. Ransom, Ann Arbor.—p. 332.
Famous Men in Medical History: Samuel D. Gross. L. D. Dickey.—p. 334.
Michigan's Department of Health. C. C. Slemons, Lansing.—p. 338.

Military Surgeon, Washington, D. C.

70: 427-528 (May) 1932

Report of Sixth International Congress of Military Medicine and Pharmacy. W. S. Bainbridge.—p. 427.
*Chronic Bismuth Intoxication. C. O. Leff.—p. 456.
Care and Evacuation of Fracture Cases (Battle Casualties). N. T. Kirk.—p. 462.
Eight Years of Organized Reserve Training. G. A. Skinner.—p. 472.
Transportation of Household Goods by Auto Van. H. C. Michie.—p. 480.
Tourist Camps. W. O. Wetmore.—p. 483.

Chronic Bismuth Intoxication.—Leff divides the treatment of bismuth intoxication into three distinct phases, as follows: 1. Immobilization of bismuth. This part of the treatment has to do with the alleviation of acute symptoms. This is accomplished by producing a negative balance in the body by the administration of calcium salts. All patients are given an initial dose of 25 cc. of a 2 per cent solution of calcium chloride intravenously or, when the veins are not accessible, 10 cc. of 10 per cent solution of calcium gluconate. This is usually repeated for two successive days if the symptoms warrant repeated injections. In cases in which the abdominal pains, colic or diarrhea predominate, the calcium injections may be given up to three times daily for a few days. In addition, tincture of belladonna is administered orally and the diet is restricted to milk 6 ounces (180 cc.) and cream 2 ounces (60 cc.) every three or four hours. In cases of milder degree and those cases which have improved on the milk and cream mixture, a calcium positive diet is given, consisting of milk, cream 5 per cent, vegetables, eggs, jello and ice cream. In all cases from 50 to 100 grains (3.25 to 6.5 Gm.) of calcium lactate is administered orally every day as the case may need. In cases without diarrhea or nephritis, the cathartic of choice is magnesium sulphate. Otherwise less drastic methods of bowel evacuation are employed. The nephritic cases after the alleviation of the acute symptoms are treated as acute nephritic patients. The average immobilization treatment lasts about ten days. Relief from symptoms usually begins in about two days in the moderate cases. 2. Demobilization of bismuth. When acute symptoms have subsided for a reasonable length of time, the patient is debismuthized. The aim is to change the hydrogen ion concentration of the blood stream so that small quantities of bismuth may be thrown into the circulation and eliminated. The patients who showed no signs of an initial nephritis are given 10 cc. of dilute phosphoric acid four times daily in a suitable vehicle. The diet is an acid-forming one. The patients who showed an initial nephritis are given sodium bicarbonate with great caution. The initial dose is about 5 Gm. daily and this is gradually increased until 20 Gm. is administered daily. The diet is either neutral or alkali producing. Patients must be carefully watched for symptoms of acidosis or alkalosis and remedial treatment instituted when such symptoms occur. When the urine examination shows that the elimination of bismuth is becoming increasingly difficult, further elimination is not attempted. The patient is permitted to return to his customary mode of living or a modified one as the case calls for, and the recurrence of symptoms is watched. 3. Supportive treatment. During the demobilization stage, the patient is treated for the secondary anemia and the loss of general health. For the former, iron compounds are administered, intramuscularly, twice weekly. For the latter, a mixture consisting of 1 drachm (4 Gm.) of lecithin to 6 ounces (180 cc.) of cod liver oil is given twice daily in tablespoon doses. Hexylresorcinol, 2 per cent solution in olive oil, one tablespoonful every four hours, has proved beneficial in refractory cases of nephritis.

Missouri State M. Assn. Journal, St. Louis

29: 193-238 (May) 1932

*The Rationale of Treatment in Some Acute Conjunctival Infections. H. J. Howard, St. Louis.—p. 193.
Sodium Amytal in Treatment of Paresis: Preliminary Report. R. M. Fellows, Galveston, Texas.—p. 194.
Arthritis: Etiologic Classification and Points in Differential Diagnosis. D. E. Kauffman, St. Louis.—p. 196.
Postnatal Care. G. D. Royston, St. Louis.—p. 198.
Some Clinical Observations on Measles Epidemic of 1931 in St. Louis. J. Zahorsky, St. Louis.—p. 205.
Economic Importance of Efficient Medical Service to Public and the Railroad. E. P. North, St. Louis.—p. 207.

Acute Conjunctival Infections.—According to Howard, it is doubtful whether the common antiseptic solutions have a bactericidal effect on the causative agent of an acute conjunctivitis, except during the few hours immediately following the inoculation. Since there is no evidence of infection during the first day, such treatment obviously would not be instituted except in those rare cases in which there is definite knowledge of an infection. The use of strong antiseptic solutions during the purulent stage of an acute conjunctivitis also seems to be inadvisable, first, because they have no effect on the bacteria which have already invaded the cellular layers; secondly, because they probably interfere with the defensive mechanism of the tissue, and, thirdly, because they subject the patient to unnecessary distress. During this stage, frequent irrigations with boric acid or physiologic solution of sodium chloride are probably more efficacious than instillations of even mild germicidal solutions. After the bacteria have disappeared—a phenomenon that varies in point of time with the different organisms—only soothing lotions, preferably physiologic solution of sodium chloride, should be used to keep the culdesacs clean. One cannot judge from the appearance of an eye whether or not the invading bacteria have disappeared. A knowledge of the type of organism that caused the infection should make it possible to predict the approximate time of its disappearance. Otherwise, frequent bacteriologic examinations will have to be made. The presence of bacteria in scrapings and smears does not necessarily establish the diagnosis unless the organisms are found on epithelial cells in stained specimens. Professional care of cases of acute conjunctivitis is important in order that measures may be taken to prevent extension of the infection to the second eye, should it still be uninvolved, and also to other persons in the household. One should watch for corneal complications, which in rare instances do occur.

Nebraska State Medical Journal, Lincoln

17: 177-220 (May) 1932

*One Sided Branch Block: Review of Forty-Seven Cases. A. L. Smith, Lincoln.—p. 179.
Carcinoma of Oral Cavity. A. F. Tyler, Omaha.—p. 185.
Spinal Anesthesia: Part I. C. H. Arnold, Lincoln.—p. 189.
Ureteral Calculi: Treatment and Results in One Hundred Consecutive Cases. A. D. Munger, Lincoln.—p. 192.
*Contact Glasses. J. H. Judd, Omaha.—p. 195.
Agranulocytosis Angina. J. Buis, Pender, and N. E. Hansen, Emerson.—p. 197.
Urethral Caruncle. D. T. Quigley, Omaha.—p. 201.
Drug Idiosyncrasy Due to Phenyl Group. E. S. Maloney, Omaha.—p. 205.
Familial Icterus Gravis of the New-Born: Case Report. J. Kunel, Alliance.—p. 206.
Simplified and Improved Method for Radical Amputation of Breast. V. L. Siman, Norfolk.—p. 207.

One Sided Branch Block.—Smith reports that in a series of forty-seven cases with one sided permanent branch block, forty-four of the patients died within eighteen months after coming under observation. Three are still living and have survived five, four and three years, respectively. One sided branch block is a serious disease and in a large majority of cases carries with it a bad prognosis, since at the best the patient will seldom live over eighteen months. There is no clinical method by which the diagnosis can be made; since it depends entirely on the use of the electrocardiograph, it is probably often overlooked. It is a disease of advanced years. Since the prognosis in one sided branch block is so serious and since it is the result of heart disease it seems necessary, besides a complete physical examination, to employ the electrocardiograph in every case of heart disease.

Contact Glasses.—According to Judd, contact glasses are probably of greatest value in correcting visual defects in cases of irregular corneal astigmatism, because with the corneal astigmatism nullified by the fluid meniscus, simple spherical corrections give improvement of vision unattainable in any other way. These glasses are also of use in cases of diffuse interstitial haze, scattered nebulae and definite keratinization of the cornea. In albinism, especially when they are tinted, they often relieve certain symptoms such as defective vision, photophobia and even nystagmus. They have been used with good results in many varieties of keratitis: inflammatory, neuroparalytic and degenerative. A continuous application to corneal ulcers can be made by smearing the inner surface of the glass with an ointment. In plastic operations of the cornea the glasses are valuable for maintaining grafts in position. They are not suitable for squint cases, although theoretically prisms could be incorporated in the glass. They are of value in certain sports, such as swimming, in which glasses cannot well be worn. In speed racing on land, sea or air, they protect the cornea from wind, and, when tinted, from glare, with the added advantage that fog or rain cannot condense on them. In certain instances they cannot be worn, for some eyes are so deformed that a spherical glass cannot adhere to them and some patients are so sensitive that they cannot get accustomed to wearing them. The author believes that while the use of contact glasses may be regarded as still in the experimental stage, they certainly offer many possibilities and in the future will no doubt find increased application.

New England Journal of Medicine, Boston

206: 875-924 (April 28) 1932

*Transplantation of Ureters into Rectum: Report of Five Cases. F. H. Lahey, Boston.—p. 875.
Problems and Opportunities in Public Health and Relation of Practicing Physicians Thereto. S. H. Osborn, Hartford, Conn.—p. 877.
Reported Gonorrhea and Syphilis in Massachusetts in 1931. N. A. Nelson and G. W. Anderson, Boston.—p. 882.
*Acute Anterior Poliomyelitis: Treatment of Bulbar and High Spinal Types. J. L. Wilson, Boston.—p. 887.
Use of Rabbit in Aschheim-Zondek Test for Pregnancy. W. H. Grant, N. Zibel and H. E. MacMahon, Boston.—p. 893.
The Springfield Isolation Hospital. A. G. Rice, Springfield, Mass.—p. 898.
Progress of Gastro-Enterology in 1931. A. E. Austin, Boston.—p. 901.

Transplantation of Ureters into Rectum.—Lahey believes that, technically, bilateral rectal transplantation of the ureters at one sitting with indwelling tubes is a satisfactory and reasonably safe procedure. The rectum serves as a highly satisfactory substitute for the urinary bladder as to the matter of storage and of warning as to emptying time. Total removal of the bladder following transplantation of both ureters into the rectum is not a difficult operation in the female particularly and makes cure of carcinoma of the bladder possible when it can be diagnosed early. Transplantation of the ureters offers the opportunity to relieve many patients with other troublesome lesions of either pain or inconvenience from urinary leakage by substituting the rectum for the bladder as a urinary reservoir.

Acute Anterior Poliomyelitis.—From experience with ninety patients with either the "bulbar" form of poliomyelitis or paralysis of the intercostal muscles or the diaphragm, Wilson has derived a program for the symptomatic treatment of the *various types of respiratory disturbances occurring in this disease.* Three possible mechanisms were distinguished which brought about respiratory failure. The first, paralysis of the intercostal muscles or of the diaphragm; the second, in patients with pharyngeal paralysis, excessive fatigue caused by continual interference with inspiration by unswallowed material in the pharynx or to actual aspiration of this material; the third, direct involvement of the respiratory "centers." Twenty-three patients with paralysis of the respiratory muscles were treated in the Drinker respirator. Three died, all of pneumonia. Features believed to be of great importance in the treatment of these patients were (1) early, uninterrupted and prolonged use of the respirator, to avoid dyspnea or fatigue, especially in the acute stage of the disease; (2) painstaking care of the patients in the respirator in respect to frequent change in position, cleanliness of the skin and care of the bowels, and, *for* patients who had also pharyngeal paralysis, postural drainage and administration of parenteral fluids. Forty patients with undoubted pharyngeal paralysis were treated. Therapeutic details of greatest value were (1) avoidance of vomiting by keeping the stomach empty during the febrile period and until hunger returned, (2) postural drainage, (3) aspiration of the throat, (4) adequate administration of parenteral fluids, and, *(5) in a few selected cases, tracheotomy. Twenty patients with* probable involvement of the respiratory centers or with sudden respiratory failure following an attack of choking were treated the Drinker respirator. Thirteen of these patients died. The author believes that the respirator was an important factor in the survival of the others.

Porto Rico J. Pub. Health & Trop. Med., San Juan

7: 287-400 (March) 1932

Skin Reactions to Necator Americanus in Persons Infected with Common Intestinal Parasites. G. W. Bachman and R. Rodriguez-Molina, San Juan.—p. 287.
Filariasis in Porto Rico. W. A. Hoffman, R. A. Marin and A. M. B. Burke, San Juan.—p. 321.
An Epidemiologic Study of Hookworm Disease in Rural Coastal Plain and City Area of Porto Rico. S. Daengsvang, Baltimore.—p. 359.
Brief Summary of Observations on Flora of Normal Throats in San Juan, Porto Rico, June, 1929-1930. P. Morales-Otero, San Juan.—p. 377.
Notes on Life History of Anopheles Albimanus and Grabhamii. W. C. Earle, San Juan.—p. 381.

Public Health Reports, Washington, D. C.

***47:** 987-1041 (April 29) 1932*

Typhus Fever: Multiplication of Virus of Endemic Typhus in Rat Flea Xenopsylla Cheopis. R. E. Dyer, W. G. Workman, E. T. Ceder, L. F. Badger and A. Rumreich.—p. 987.
Sickness Among Male Industrial Employees During Last Three Months of 1931, and Summary of Sickness Frequency by Years Since 1920. D. K. Brundage.—p. 995.

Surgery, Gynecology and Obstetrics, Chicago

54: 733-860 (May) 1932

Histopathology of Uterus in Relation to So-Called Essential or Idiopathic Uterine Bleeding. Mary Spivack, Chicago.—p. 733.
**Toxic Neuronitis of Pregnancy: Clinicopathologic Report.* N. J. Berkwitz and N. H. Lufkin, Minneapolis.—p. 743.
Pathologic Anatomy of Testicular Torsion: Explanation of Its Mechanism. M. Muschat, Philadelphia.—p. 758.
Observations on Response of the Same Chimpanzee to Dial, Amytal and Nembutal, Used as Surgical Anesthetics. J. F. Fulton, New Haven, Conn., and A. D. Keller, Tuscaloosa, Ala.—p. 764.
*Solution of Choice in Proctoclysis. G. L. Perusse, Jr., Chicago.—p. 770.
*Incidence of Tetanus Bacilli in Stools and on Regional Skin of One Hundred Urban Herniotomy Cases. K. A. Meyer and Bertha Kaplan Spector, Chicago.—p. 785.
*Etiology of Placenta Praevia. B. Solomons, Dublin, Ireland, and H. E. Canter, Pittsburgh.—p. 790.
Radium Treatment of Cancer of Corpus Uteri. I. de Büben, Budapest, Hungary.—p. 791.
An Easy Operation for Removal of Cancer of Rectum in Female. L. E. Burch, Nashville, Tenn.—p. 794.
*Six Years of Tannic Acid Treatment of Burns. D. M. Glover, Cleveland.—p. 798.
Technic of Parathyroidectomy. M. Ballin, Detroit.—p. 806.
Tumors of Mesentery. F. W. Rankin and S. G. Major, Rochester, Minn.—p. 809.
Nephrostomy: Indications and Technic. H. Cabot and W. W. Holland, Rochester, Minn.—p. 817.
Nupercaine Spinal Anesthesia. E. E. Arnheim and S. Mage, New York.—p. 826.
Jaundice Caused by Pancreatic Lesions. W. Walters and E. A. Dehne, Rochester, Minn.—p. 832.
Basal Cell Carcinoma of Vulva. L. N. Claiborn and H. B. Holsinger, New Haven, Conn.—p. 836.
*New Method of Treating Breast Abscesses. J. E. Hobbs, St. Louis.—p. 839.
Modification of Kimpton-Brown Method of Whole Blood Transfusion. L. Brooks, San Francisco.—p. 842.

Toxic Neuronitis of Pregnancy.—Berkwitz and Lufkin call attention to the fact that paralysis resulting from toxemia of pregnancy has been reported under such names as peripheral neuritis, polyneuritis and toxic myelitis of pregnancy. They use the name toxic neuronitis of pregnancy, since the nerve cells are involved as well as the peripheral nerves. Forty-eight cases of this condition were compiled from the literature, six of them having reports of necropsy observations. In addition to these, the authors added four of their own cases, with necropsy reports of three. This condition usually develops in the first trimester and is usually preceded by uncontrollable vomiting. The lower extremities are usually involved first. Later the paralysis becomes more extensive. Mental symptoms of a delirious and confusional nature appeared in about two thirds of the cases. Sphincter disturbances and tachycardia were present in over half of the cases. Optic neuritis was present in the four cases observed by the authors, although it was mentioned in only a few of the cases found in the literature. The results of chemical examination of the blood and the urine were negative in all the reported cases. The gross observations at necropsy also were essentially negative. In the authors' three cases in which necropsies were performed, the liver and kidney showed, microscopically, a mild cloudy swelling. The microscopic study of the nervous system gave observations characterized by degenerative changes of the peripheral nerves and anterior horn cells. Petechial hemorrhages were found in a number of the sections of the brain and spinal cord. This condition has been attributed to a form of autointoxication. Its appearance is similar to a severe form of the nausea and vomiting (morning sickness) that occurs in about 50 per cent of pregnancies. The weakness of the patient from paralysis may be easily confused with weakness due to inanition resulting from hyperemesis, and without careful neurologic examination the condition may not be recognized. The histories of the cases studied indicate that interruption of pregnancy as soon as definite neurologic symptoms appear is the most satisfactory treatment. The mortality of this condition has been about 25 per cent, but it is believed that this figure can be greatly reduced if the condition is recognized and treated early. Although toxic neuronitis of pregnancy is comparatively rare, its serious character demands attention and emphasizes the need of a thorough neurologic examination of pregnant women with hyperemesis.

Solution of Choice in Proctoclysis.—Perusse reports that of twenty-one solutions used in proctoclysis which he investigated, 1 per cent dextrose solution was the most efficient. It may be combined with 0.5 per cent sodium bicarbonate with a somewhat lowered rate of absorption, but a possible greater effect in combating acidosis. Of the inorganic salts studied, 0.5 per cent sodium bicarbonate solutions were superior to others in rate of absorption. Isotonicity is not the ideal concentration for a given solution, for by maintaining such a concentration one is neglecting one of the best properties of the intestine; namely, its action as a semipermeable membrane. Hence if one introduces a solution definitely hypotonic to the blood it is more readily absorbed, following the laws of osmosis. In regard to the dextrose solutions, one may consider that the selective activity of the intestinal cells comes into play.

Incidence of Tetanus Bacilli in Stools.—According to Meyer and Spector, the stools of healthy individuals not infrequently contain tetanus organisms. A fair percentage of individuals harbor on the skin adequate tissue devitalizing organisms (Bacillus welchii in combination with pathogenic aerobic bacteria) even after the usual routine surgical preparation. The occurrence of postoperative tetanus in cases in which exogenous sources (catgut, and so on) can be excluded are to be traced to organisms derived from the intestinal tract. Stool and regional skin cultures should constitute part of the routine search for the source of contamination in all cases of postoperative tetanus. The incidence of healthy carriers of the tetanus bacillus is relatively high among the rural population and relatively low among urbanites (1 per cent in Chicago).

Etiology of Placenta Praevia.—From animal experiments and from observations on the nonpregnant uterus, Solomons and Canter believe that the cause of placenta praevia lies in a defective or deficient production of the decidua formation of the upper portion of the uterus, with a normal or sufficient amount of decidua in the lower portion of the uterus. When the fertilized ovum, therefore, enters the uterus, it will seek the place where it can obtain the greatest amount of nourishment. Since the upper portion is deficient or poorly developed to receive the tenant, it will be attracted to the greatest amount of decidua reaction—in the lower portion of the uterus.

Tannic Acid Treatment of Burns.—Glover describes a method of management of severe burns with tannic acid. The principal features of the method are as follows: Burns should be regarded as emergencies and treatment started at the earliest moment. Burned areas are sprayed with a 5 or 10 per cent tannic acid solution, while the patient remains under a heated cradle. An adequate amount of fluid is administered to combat dehydration; at the same time, care is taken not to overload the circulation with fluid. Continuous dressings wet with surgical solution of chlorinated soda are used to hasten separation of the coagulum during the "secondary toxic stage," which is described. Early skin grafting is recommended to prevent development of a profound secondary anemia, to diminish danger of late septic complications, and to prevent unnecessary scarring or contracture.

New Method of Treating Breast Abscesses.—Hobbs believes that the occurrence of breast abscesses can be prevented in great part by suitable prophylactic measures, but, owing to neglect by the attending physican or mother, breast abscesses still occur frequently during the lactation period. It is important to establish proper drainage with minimum scarring of the breast. This can be done by making a stab wound large enough to accommodate a rubber tube one half inch (1.3 cm.) in diameter, which is made secure by suturing to the skin. Other drains and counterdrainage will be unnecessary. A Dakin tube is inserted through the drainage tube and the cavity is irrigated with solution of sodium hypochlorite, which is a disinfectant, destroyer of necrotic material, stimulator of granulation tissue, and deodorant. It does not harm healthy tissue. Petrolatum gauze is a dressing that can be removed and applied without pain to the patient. It protects the skin from the irritating and macerating effect of the discharge. It is imperative that this or some other oily dressing be used when the cavity is irrigated with sodium hypochlorite. A gauze roll makes an excellent binder, for it gives support, effects compression, and serves as a protective dressing.

Virginia Medical Monthly, Richmond

59: 65-128 (May) 1932

Study of Lung Involvement in Human Ascariasis. F. J. Wampler and L. E. Sutton, Jr., Richmond.—p. 65.
*Difficulties Encountered in Etiologic Diagnosis of Aortic Regurgitation. A. D. Hart and J. E. Wood, Jr., University.—p. 72.
Treatment of Postoperative Intestinal Obstruction. C. R. Robins, Richmond.—p. 77.
Ward Walk: Discussion of Some Clinical Problems. M. J. Payne, Staunton.—p. 82.
Repair of Bilateral Harelip. J. G. Lyerly, Richmond.—p. 85.
Intramuscular Injection of Liver Extract in Cases of Pernicious Anemia. J. L. Thompson, Washington, D. C.—p. 88.
Trauma of Abdomen. F. S. Johns, Richmond.—p. 92.
Early Diagnosis of Tuberculosis in Children and Young Adults. C. W. Scott, Port Republic.—p. 94.
Physical Factors in Coronary Occlusion. J. M. Hutcheson, Richmond. —p. 100.
Birth Control. W. M. Bowman, Petersburg.—p. 102.
Epidemic Encephalitis. J. R. Gill, Petersburg.—p. 106.
Don'ts in Dermatology. J. Beverly DeShazo, Ridgeway.—p. 110.

Etiologic Diagnosis of Aortic Regurgitation.—One hundred and twenty-five patients with pure aortic regurgitation were studied clinically by Hart and Wood, with particular reference to the cause of the underlying valve defect. In sixty-nine cases (55 per cent) the aortic lesion was thought to be due to syphilis; in ten (8 per cent), to previous rheumatic infection. In forty-six instances (37 per cent), a causative factor could not be accurately determined. The value of an etiologic diagnosis in cases of aortic regurgitation cannot be doubted. The importance of a careful history is emphasized as an indispensable factor in the majority of syphilitic and rheumatic cases. Physical examinations should be completed with particular regard to the presence of conditions that might be associated etiologically with the aortic defect. Exclusive of the serologic tests for syphilis and roentgen studies of the heart, further procedures are of little value. At least one third of all cases of pure aortic regurgitation present difficulties in diagnosis which are as yet not overcome by known clinical or postmortem methods of study. By applying the ordinary methods of examination, the average physician may effect an etiologic analysis of this disease in a measure equal to that attained by more highly trained workers.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

7: 59-103 (April) 1932

Kala-Azar in Children of North China. Annie V. Scott.—p. 59.
*Further Note on Gastromegaly from Duodenal Ileus. R. Miller and H. C. Gage.—p. 65.
Multiple Cases of Erythema Nodosum in a Class of School Children. A. Landau.—p. 77.
*Extent of Pancreatic Lesions in Diabetic Children. H. E. W. Roberton.—p. 83.
Difficult and Defective Children. A. D. Fordyce.—p. 89.
Urinary Obstruction: Four Cases. A. V. Neale.—p. 97.

Gastromegaly from Duodenal Ileus.—Miller and Gage present two additional pieces of evidence to support their view that chronic (congenital) duodenal ileus or arteriomesenteric compression is the cause of a syndrome in children in which enlargement and hypertrophy of the stomach (gastromegaly) is the most prominent physical sign. First, they record the case of a baby who died on the ninth day of life with symptoms suggestive of duodenal atresia, the postmortem examination revealing a definite degree of obstruction of the duodenum as it passed under the root of the mesentery. Second, they reproduce roentgenograms taken in the case of a girl aged 8 years in which the symptoms, signs and reaction to treatment are the same as in their previously reported cases. The roentgenograms show the duodenum quite clearly and suggest the presence of obstruction in its third part. The authors discuss the arguments against their hypothesis, which are based on the practical difficulty of demonstrating duodenal ileus roentgenologically and by other means, and they dismiss them on the grounds that the same difficulties are encountered even in the examples which are verified as correct by operation or postmortem examination.

Pancreatic Lesions in Diabetic Children.—Roberton calls attention to the fact that, during the last few years, children with diabetes have tended to require progressively more insulin until they require 1 unit for each 1.5 Gm. of potential carbohydrate in the diet. He suggests that at this stage they are not secreting an appreciable amount of insulin, because (1) experiments show that 1 unit corresponds to about 1.5 Gm. of dextrose and (2) exhaustion of the pancreas is the simplest explanation of the disease ceasing to be progressive at this stage.

British Journal of Surgery, Bristol

19: 523-684 (April) 1932

Diaphragmatic Hernia. J. B. Hume.—p. 527.
*Treatment of Dupuytren's Contracture: Review of Thirty-One Cases, with an Assessment of Comparative Value of Different Methods of Treatment. A. A. Davis.—p. 539.
*Ureterocele: Some Observations Based on Investigation and Treatment of Four Cases. J. C. Ainsworth-Davis.—p. 548.
*Adrenogenital Syndrome Associated with Cortical Hyperplasia: Results of Unilateral Adrenalectomy. L. R. Broster and H. G. Hill, with Histologic Notes by J. G. Greenfield.—p. 557.
Embryonic Epithelial Rests in Pituitary. W. Susman.—p. 571.
*Isolated Fracture of Carpal Semilunar and Kienbock's Disease. T. B. Mouat, J. Wilkie and H. E. Harding.—p. 577.
Hydatid Pneumothorax. L. Barnett.—p. 593.
Some Complications of Traumatic Dislocation of Hip Joint. H. Platt.—p. 601.
Parathyroid Tumor Associated with Fibrocystic Disease: Case. G. Gordon-Taylor and P. Wiles, with Pathologic Account by S. L. Baker.—p. 606.
Incidence of Anaerobic Infections in Gallbladder. G. Gordon-Taylor and L. E. H. Whitby.—p. 619.
Further Studies in Intravenous Pyelography. R. J. Willan and J. H. Saint.—p. 622.
The Sympathetic in Acute General Peritonitis: Clinical Study with Observations on Treatment. J. J. Robb.—p. 634.
Rapidly Growing Carcinoma in Neck, Arising in a Parathyroid Rest: Case. L. W. Price and G. T. Mowat.—p. 645.
Operative Treatment of Elephantoid Scrotum. W. K. Connell.—p. 651.

Dupuytren's Contracture.—Davis calls attention to the fact that the etiology of Dupuytren's contracture remains obscure. Mechanical methods of treatment, including fibrolysin and radium and roentgen therapy, are useless, with the proviso that further experience may conceivably make radium a safe and effective cure. Operation of some type remains the method of choice in treatment. The author suggests that as the results from even the most major operative procedures are far from satisfactory, the minor operation of multiple subcutaneous fascial division should be adopted, and repeated if necessary, in the average patient of the hospital class. In patients of the more leisured class, wide fascial excision with replacement of involved skin by a free full-thickness skin graft is probably most advisable, combined, if necessary, with Hutchinson's operation. When the best cosmetic result is desirable, e. g., in nonlaboring women and in men of the professional classes, Thiersch grafts may be substituted for the thicker one of full thickness. Implants of fat or fascia are theoretically undesirable and have not been uniformly successful in application.

Ureterocele.—According to Ainsworth-Davis, ureterocele is due to obstruction from a pin-hole ureteral orifice, which may be congenital or acquired, unilateral or bilateral. When diagnosed, it should be treated by surgical intervention to prevent renal destruction by back-pressure or by the occurrence of infection. Ureterocele can, and should, be dealt with by perurethral methods, except in the presence of complications that require open operation. Diathermy applied by a cystoscopic electrode is the method of choice and is perfectly safe, provided the following rules are observed: 1. Coagulation should be effected well clear of the ureteral orifice and its papilla. 2. An attempt should be made to perforate the cyst wall at the time of treatment. 3. Should the papilla become involved by accident and the cyst be unperforated, inflammatory occlusion becomes almost a certainty, and a small area of the wall should be excised by cystoscopic scissors, or perforated by a cystoscopic knife.

Suprarenogenital Syndrome.—Broster and Hill performed unilateral suprarenalectomy in three cases representing three different types of the suprarenogenital syndrome associated with suprarenal cortical hyperplasia—namely, pseudohermaphrodism, virilism or hirsutism, and the Achard-Thiers syndrome (diabetes of fat bearded women). All three patients made complete recoveries and are in good health. In no instance were untoward postoperative symptoms observed, and the blood pressure did not vary during or after operation. The effects of unilateral suprarenalectomy on the main symptoms of the syndrome, the hypertrichosis, and sex changes were not the same in the three cases. In the late syndrome (suprarenal virilism) markedly beneficial results were obtained, but in the early form (pseudohermaphrodism) and in the Achard-Thiers type (probably a pluriglandular disturbance) no change in the symptoms was observed. The authors' experience would therefore suggest that unilateral suprarenalectomy is indicated in the late syndrome (virilism) due to suprarenal cortical hyperplasia, when the suprarenal lesion is mainly unilateral, but not in the other two forms.

Fracture of Carpal Semilunar and Kienböck's Disease.—Mouat and his associates emphasize the fact that fracture of the carpal semilunar is not uncommon, though often unrecognized, and the resulting local reaction is treated as a sprain, without sufficient immobilization. The process of repair in the damaged bone is retarded by the defective blood supply and the poor reactive powers of its cartilaginous covering. A slow progressive degeneration ("Kienböck's disease") with absorption of necrotic bone lamellae and fibrous replacement then takes place during a varying and often long quiescent interval, which is ultimately followed by deformation of the bone, with recurrence of the local symptoms and continued disability. A similar local reaction may result from repeated minimal occupational traumas and in exceptional cases may be caused by an attenuated infection.

British Medical Journal, London

1: 739-784 (April 23) 1932

*Injuries About the Elbow in Children. R. Jones.—p. 739.
*Treatment of Tetanus. L. Cole.—p. 743.
Endocrine Therapy in Dysmenorrhea. W. P. Kennedy.—p. 746.
Age Incidence of Seropositive Syphilis in Females. J. E. Nicole.—p. 749.
Case of Polycythemia Rubra Developing Anemia. R. Platt.—p. 750.
Intranasal Treatment by Ionization in Hay Fever, Vasomotor Rhinitis, and Ozena. P. Franklin.—p. 751.

Injuries About the Elbow in Children.—According to Jones, the serious complications of injuries about the elbow in children are ischemic contraction, nerve complications and myositis ossificans. Ischemic paralysis is a most serious complication and often starts with a dramatic onset. It may follow any fracture of the elbow, most frequently supracondylar, or it may occur in a backward dislocation of the elbow. Experiments have confirmed clinical experiences that the condition is due to acute venous obstruction; it does not occur when obstruction is gradual. The calamity may be due to pressure from within, such as hemorrhage into the antecubital fossa, pressure from displaced fragments, or pressure from without, such as tight bandaging. Treatment should be immediate; every minute is important. The arm should be released from all restraint likely to cause vascular obstruction; it should also be elevated. The child's future is so jeopardized that an attempt should be made to evacuate the blood clot by an incision on the antero-ulnar side of the forearm, and all blood expressed from the antecubital space. This prompt action may save the situation; it rests on a sound pathologic foundation, and successful cases have been reported. The ulnar nerve is often injured directly, or after a long interval. Direct injury occurs sometimes in cases of damage of the median epicondyle or in the condylar groove, and the nerve should be exposed only if symptoms persist. It may be necessary to transpose it anteriorly. Myositis ossificans may arise after any fracture about the elbow but is most commonly associated with dislocation of the elbow backward. Its onset is gradual, and, when established, may result in a complete or partial anklylosis of the elbow joint. It is generally due to tearing of the muscular and periosteal tissue from bone, accompanied by hemorrhage. Fragments of periosteum and osteogenic tissue are pulled away, and probably in this way the formation of new bone takes place along the interfibrillary and intermuscular septums. While one has every right to expect a good result from injuries of the elbow, one should be alive to possibilities and dangers. One should carefully note any nerve involvement at the moment of injury; one should speak of the possibilities of myositis ossificans and warn the parents of the dangers of energetic massage and movement campaigns. One should also recollect that the practitioner is not necessarily to blame if an ischemic palsy occurs; it may have nothing to do with tight bandaging, and it has occurred without flexion of the elbow, without splints and without bandaging. At the same time one should, if possible, prevent pressure from within by reducing displacements that cause acute venous obstruction, and avoid pressure from without. By no argument can the practitioner be held guilty of the origin of a myositis ossificans, nor can he be blamed for its development, provided he does not prescribe passive movements during the period of bone formation. If myositis ossificans appears and any error is to be made, it should be made on the side of rest; the author has seen many tragedies occur from too early movement. Finally, one should not fully flex an elbow without first reducing the fracture or displacement, and, having flexed the elbow, one should not obstruct the circulation of the arm by bandaging it in the flexed position.

Tetanus.—Cole states that tetanus is still sufficiently common in some districts to make it worth while reemphasizing the importance of prophylactic antitoxin, even after trivial wounds. When the disease has developed, the following rules should be observed: 1. Diagnosis should be made and treatment begun as early as possible. Pain and stiffness in the back of the neck and spine may be the earliest symptoms. These, associated with slight stiffness of the jaw and rigidity of the abdomen, should suggest tetanus. 2. Local treatment of the wound should be thorough, and should be done at the earliest possible moment. 3. Antitoxin should be given as soon as possible in large doses, preferably by the intravenous route. 4. Every effort must be made by symptomatic measures to reduce spasms and allay pain. For this purpose "Avertin" may prove of value. 5. The strength must be maintained by giving plenty of nourishment. For this to be achieved, good nursing is essential. Dextrose should be given freely.

Guy's Hospital Gazette, London

46: 137-152 (April 16) 1932

Hemorrhage in Jaundiced Patients. J. C. Colbeck —p. 138.
The Northwestern University Dental School of Chicago. W. E. Herbert. —p. 145.

46: 153-176 (April 30) 1932

Head Injury: Two Cases. E. C. Hughes.—p. 155.
Hemorrhage in Jaundiced Patients. J. C. Colbeck.—p. 157.

Journal of Anatomy, London

66: 283-436 (April) 1932

Effects of Stimulation of Hypothalamic Pupillodilator Center After Successful Anastomoses Between Cervical Sympathetic and Certain Motor Nerves. J. Beattie, A. B. Duel and C. Ballance.—p. 283.
Study by Degeneration Methods of Innervation of Muscles of Lizard. O. W. Tiegs.—p. 300.
Anatomy of Intercostal Nerves. F. Davies, R. J. Gladstone and E. P. Stibbe.—p. 323.
Cervical Ribs and Rudimentary First Thoracic Ribs Considered from Clinical and Etiologic Standpoints. R. J. Gladstone and C. P. G. Wakeley.—p. 334.
Some Variations in Lower End of Femur Which Are Especially Prevalent in Bones of Primitive People C. P. Martin.—p. 371.
Note on Identification of Lumbar Vertebrae of Man. E. Fawcett. —p. 384.
Vascular Supply of Pituitary Body in Dog. M. A. Basir.—p. 387.
Morphologic Characters of Australian Skull. W. M. Krogman.—p. 399.
Growth in Length of Long Bones in Madder-Fed Pig. C. G. Payton. —p. 414.
Anatomic Notes: Fusion of Cervical Vertebrae. N. Pan.—p. 426.
Teratologic Duplication in Sparrow, Passer Domesticus L: Case. W. E. Stoneman.—p. 430.
Defective Development of Septum Pellucidum. R. K. Rau and D. Sivasubrahmaniam.—p. 432.

Lancet, London

1: 867-918 (April 23) 1932

*Rôle of Hemolytic Streptococci in Infective Disease. C. C. Okell.—p. 867.
*Nature of Action of Radium and Roentgen Rays on Malignant Growths. S. Russ.—p. 874.
Pseudomirror-Writing: Case: Some Observations. R. Eager and J. W. Fisher.—p. 876.
*Therapeutic Effects of Plasmochin in Pregnancy. P. Manson-Bahr.—p. 882.

Hemolytic Streptococci in Infective Disease.—Okell presents evidence that seems to constitute a *reductio ad absurdum* for any specificity view of the hemolytic streptococci and the common human diseases with which they are related. It is as impossible to separate the several clinical and epidemiologic forms of streptococcal disease as it is to distingush specifically the streptococci found in connection with them. The attitude of the physician when faced with the actual practical clinical and epidemiologic problems of these diseases must largely depend on the view he takes of this matter, and one or the other view he must take as a working hypothesis and as a scheme for holding together the large number of facts that are available on the subject of the hemolytic streptococci and the diseases associated with them. The unitarian view is consonant with the admitted failure of the bacteriologist to subclassify the group. It is in consonance with the curious sequences of propagation that may be observed in streptococcal disease. It does something to explain the mysterious birth of streptococcal epidemics and the failure of hospital and other forms of isolation to control the incidence of scarlet fever. It permits a description of the hemolytic streptococci daily encountered in disease under one name, and it calls a truce to what Topley and Wilson call the "riot of christening," which has brought so much confusion into the study of this group. In designating a common toxin throughout the group and defining the clinical effects of that toxin, it indicates both the value and the limitations of antitoxin treatment; and, finally, it discourages the use of nonspecific serums that are labeled as specific.

Radiotherapy of Malignant Growths.—Russ states that if one attempts to evaluate the various actions of gamma rays and roentgen rays, bearing in mind their order of appareance in the scale of quantity—how some of the vital functions of living tissues are put out of action by a quantity of radiation which has but a trifling action on their other processes—perhaps the most important classes of action are: (1) those which interfere with or disorganize the delicate processes involved in the division and maturing of cells; (2) those which determine the release into the tissues and into the circulation of the products of cells, normal as well as malignant, whose destruction is caused by the rays, and (3) those which produce changes not only in the content and production of the blood but also in its power of dealing with infection.

Plasmochin in Pregnancy.—Since 1928, Manson-Bahr has treated five cases of malaria in pregnant women suffering from all three species of malaria infection, from the third to the eighth month of pregnancy. All have been given plasmochin compound in the usually accepted therapeutic doses over a period of five separate weeks. The result was most satisfactory. The author's records show that no further relapse occurred either during pregnancy or post partum. The children were born at full term, and the only stillbirth was due to instrumentation.

Medical Journal of Australia, Sydney

1: 457-486 (April 2) 1932

The Basis of Immunity. H. D. Wright.—p. 457.
Acute Abdominal Conditions. J. C. Storey.—p. 465.

1: 487-520 (April 9) 1932

Renal Dwarfism. K. Maddox.—p. 487.

South African Medical Assn. Journal, Cape Town

6: 213-248 (April 9) 1932

The Judge and the District Surgeon. J. Tindall.—p. 215.
Surgical Treatment of Pulmonary Tuberculosis. A. R. McLachlan.—p. 219.
Patience. R Theron.—p. 223.
Ophthalmologic Aspects of Hysteria. E. A. Seale.—p. 225.
The Relationship of the Doctor to the Paranoid Patient. M. J. Cohen.—p. 228.

Tubercle, London

13: 337-384 (May) 1932

*Fatal Lung Consolidation in Rabbits Through Intravenous Inoculation with Large Doses of Human Tubercle Bacilli. S. L. Cummins and C. Weatherall.—p. 337.
Suggestions for Improvements in Comparative Statistics of Tuberculosis Schemes. G. L. Cox.—p. 344.
Psychotherapeutic Treatment of Tuberculous Patients. L. F. Browne.—p. 347.
Spontaneous "Cures" in Phthisis. E Simmerli and I. Chouery.—p. 353

Experimental Tuberculosis in Rabbits.—Cummins and Weatherall report that the intravenous injection of large doses of "human" tubercle bacilli intravenously into rabbits is followed by a "danger period," coinciding in point of time with the usual time of onset of allergic hypersensitivity and capable of leading to deaths during the third and fourth weeks after infection. Rabbits surviving this danger period tend to return to health and, when human tubercle bacilli have been used, to establish a toleration of their infection. This danger period is characterized by symptoms of constitutional disturbance, such as loss of weight, increased rate of blood cell sedimentation, and a shift to the left of the Arneth count. Rabbits dying during this danger period are found to have "solid" lungs, the consolidation being due to a perituberculous cellular and exudative reaction of allergic type. "Early deaths" of this kind would appear to be unconnected with the virulence for rabbits of the strain of tubercle bacillus employed, and the possibility of their occurrence should be borne in mind by those attempting to estimate the virulence of tubercle bacillus cultures by intravenous inoculation of rabbits.

Annales d'Anatomie Pathologique, Paris

9: 345-455 (April) 1932

Calcified Hydatid Cysts. P. Jauregui and J. L. Monserrat.—p. 345.
Biologic Effect of Beta Rays of Radium and of Roentgen Rays. Olga Valentová.—p. 371.
*Endocrine Glands in Cirrhosis of Liver. J. Barrelet.—p. 385.
Torsions of Greater Omentum. A. Folliasson and A. Dufour.—p. 405.

Endocrine Glands in Cirrhosis of Liver.—Barrelet reports the results of a systematic anatomic and histologic postmortem study of the glands of internal secretion in persons with cirrhosis of the liver. In the majority of cases of cirrhosis the endocrine glands exhibited modifications in their anatomic and histologic structure. The testes in a majority of the cases revealed atrophic lesions of the seminiferous tubules, accompanied in about half the cases by increase of the interstitial cells. In cases of Laënnec's cirrhosis, atrophy of the testes was constant and more advanced in the atrophic stage than in the hypertrophic stage, in which the testes may present a normal structure. These lesions occur independent of age and intercurrent diseases. Fibrosis of the testes was found in only one case. In young women with cirrhosis, fibrous ovaries without germinal follicles were found only once. The thyroid presented atrophic changes in the form of loss of weight and a degeneration of the colloid, whose structure was modified. The colloid was often basophilic and in 79 per cent of the cases exhibited vacuoles filled with fine granulations, refractive and mucoid in character. The hypophysis sometimes showed an increase of basophilic cells at the expense of eosinophilic cells; almost equally often the chromophobic cells were increased in number. Basophilic elements were never found in the posterior lobe of the hypophysis. The suprarenals were deficient in lipoids in about half the cases of cirrhosis; the cortex sometimes revealed an increase of the connective tissue and the pseudoglandular lumens. In half the cases, the pancreas showed proliferation of the connective tissue, followed by atrophy of the glandular parenchyma. In 6 per cent of the cases, the fibrosis extended to the islands of Langerhans and had clinically given rise to diabetes. In 25 per cent of the cases the pancreas appeared unaltered.

Nutrition, Paris

2: 113-256 (number 2) 1932

Chronic Rheumatism and Digestive Apparatus. R.-J. Weissenbach.—p. 113.
*Chronic Rheumatism of Hepatobiliary Origin. R.-J. Weissenbach, R. Glénard and F. Françon.—p. 117.
Chronic Rheumatism and Functioning of Liver: Test of Induced Galactosuria. G. Etienne and P.-L. Drouet.—p. 139.
Rheumatism and Intestinal Disturbances. M. Labbe.—p. 143.
Chronic Rheumatism and Oxalemia. M. Lœper.—p. 151.
Infectious Polyarthritis and Esophageal Diverticulum. G. Maranon and M.-P. Weil.—p. 161.
Two Rare Forms of Rheumatism in Children. W. S. C. Copeman.—p. 169.
Cellulitis as Hepatobiliary Symptom. G. Monod.—p. 173.
Digestive Tract in Persons with Chronic Rheumatism. F. Coste and J. Forestier.—p. 187.
Serous Syndrome in Gouty Rheumatism. R.-J. Weissenbach and F. Françon.—p. 217.
Crenotherapy of Chronic Rheumatism of Digestive Origin. R. Glénard.—p. 243.

Chronic Rheumatism of Hepatobiliary Origin.—It is the opinion of Weissenbach and his co-workers that diseases and functional disturbances of the hepatobiliary apparatus are not given the place they deserve among factors capable of causing the appearance of chronic rheumatism. Hepatobiliary disturbances may give rise to three types of rheumatism: 1. Infectious rheumatism, due to a septic condition of the biliary tract; the angiocholecystitis may or may not be calculous. 2. Colloidoclastic rheumatism due to insufficiency of the proteopexic function of the liver. 3. Gouty rheumatism due to disturbance of the endocrine functions of the liver which regulate the chemical content of the body fluids (uric acid, cholesterol, and so on). The authors distinguish two periods in the evolution of these forms of chronic rheumatism: a primary purely functional period, characterized by vague fleeting pains without objective semeiology and a second organic period marked by alteration of the soft parts and osteocartilaginous changes, which result in continuous pain, stiffness and deformations. The hepatobiliary origin of these forms of rheumatism is revealed not so much by clinical determination of disease or functional disturbance of the biliary tract and liver as by the concurrent and parallel or alternating oscillations of the rheumatic manifestations and the symptoms, both objective and subjective, of hepatobiliary disturbance. It is especially during the primary period that these relations are often clearly seen, and only during its course can one hope to discover the initial cause and physiopathologic mechanism of many chronic rheumatisms. Therapy of chronic rheumatism of hepatobiliary origin should envisage improvement of the condition and function of the hepatobiliary apparatus and amelioration of the rheumatic manifestations.

Paris Médical

1: 373-408 (May 7) 1932

Diseases of Heart and Vascular System in 1932: Annual Review. P. Harvier and P. Noel-Deschamps.—p. 373.
Semeiologic Value of Arteriogram. C. Laubry, T. Brosse and A. van Bogaert.—p. 385.
*Anxious Crises in Persons with an Irritable Heart. E. Doumer.—p. 395.
Anacrotic Wave of Pulse and Its Dynamic Significance. J. Barbier.—p. 398.
Intravenous Injections of Glucosides of Lily-of-the-Valley in Treatment of Cardiac Insufficiency. C. Aubertin, Robert-Lévy and Wester.—p. 405.

Anxious Crises in Persons with an Irritable Heart.—Doumer says that the paroxysmal manifestations which complicate variable tachycardia and palpitation in individuals with an irritable heart are in reality emotional paroxysms but their origin is cenesthopathic, not psychopathic. The syndrome is identical with that determined by violent emotional shock except that it develops spontaneously. A vague feeling of internal malaise invades the individual suddenly, he feels a constriction of the chest, weakness of the legs, his heart beats violently, seeming too large for his chest, and he has a feeling of losing consciousness and of impending death. For a few minutes, during which he has only a confused perception of what goes on about him, he endures terrible anguish, which finally passes. The basis of this malady consists in the hyperexcitability of the neurovegetative centers of the emotional function, which, according to Claude, not only transmit to the vagosympathetic system the mental confusion produced by emotional shock but also warn the mind of organic perturbations which may be harmful to the individual. The neurovegetative centers, sensitized to cenesthopathic stimuli, normally without effect, subject the accelerator system of the heart with which they are closely linked to repeated stimuli, resulting in habitual acceleration and incessant variations of cardiac rhythm. The tachycardia in turn evokes emotional reactions which in case of strong cenesthopathic stimuli become sensations of anguish which dominate the cardiac sensations. These crises are wrongly attributed to mental disturbance by some physicians, while others mistake them for attacks of angina, dyspnea, vertigo or syncope. Careful questioning of the patients usually reveals that the constriction of the chest, shortness of breath, dizziness and so on which they speak of in an attempt to characterize their vague sensations of anguish were not distinct enough to lead to the diagnoses mentioned and that confusion and agonizing malaise dominated all other sensations. The tachycardia, unusual instability of the heart and habitual hyperemotivity revealed in examination help to establish the diagnosis of simple spontaneous emotional paroxysms in these cases. It is a constitutional disturbance which develops in persons who have always been nervous. It is to be distinguished from the tachycardia that develops in persons following infectious disease, such as articular rheumatism, which is also characterized by variability but is not accompanied by anxiety and fear. This differentiation is important, because some therapeutic measures which give excellent results in tachycardia based on excitation of the neurovegetative centers of the emotional function are practically without effect on tachycardias of other origin.

Presse Médicale, Paris

40: 709-732 (May 4) 1932

Toxicity of Urea. L. Binet, A. Arnaudet and M. Marquis.—p. 709.
*Gonadotropic Hormone of Antehypophysis. G. Laroche and H. Simonnet.—p. 710.
Radical Cure of Femoral Hernia. P. Lerat.—p. 713.

Gonadotropic Hormone of Antehypophysis.—Laroche and Simonnet report the physiologic and clinical study of the antehypophyseal hormone which stimulates follicular maturation in the female, called by them gonadotropic hormone. In comparing its action on the functions of the genital tract with the action of the genital hormones folliculin and lutein, they state that administering folliculin to a patient replaces her insufficient folliculin, while administration of the gonadotropic hormone stimulates a deficient ovarian function. The authors have used the gonadotropic hormone in the treatment of thirty-four patients having disturbances of the menstrual cycle, with favorable results in 76 per cent of the cases. The gonadotropic hormone used by them contained 80 per cent of the active principle; it contained no folliculin, no somatotropic hormone, and not more than a trace of the luteinizing principle of the antehypophysis. Injections were sometimes made during the ten or fifteen days preceding the presumptive date for appearance of menstruation, sometimes during the interval extending from the tenth to the twentieth day after the beginning of the previous menstrual period. Given a little while after the menstrual period, the hormone activates the maturation of the follicle; given in the ten or twelve days preceding the period, it acts on the corpus luteum. It is impossible to prescribe an exact method for therapy. One should always try to reproduce the normal physiologic process by alternating the provoking of discontinued excitations of the genital system with periods of rest, permitting the latter in its turn to act on other organs. The action of the hypophyseal extract was sometimes immediate, sometimes delayed, probably depending on the phase during which it was administered. The gonadotropic hormone exerts a favorable influence on the menstrual flow and on the pathologic phenomena that accompany it and does not generally advance the menstrual periods as happens with folliculin and ovarian extracts. The amelioration of ovarian function produced by the gonadotropic hormone usually diminishes after a time, and a renewed series of injections is required to reactivate the ovarian function. Amenorrheas and dysmenorrheas of young girls and young women react best to injections of the hormone. In a woman of 24 with irregular menstruation since the age of 15 and amenorrhea for four years, who had repeatedly been given folliculin and thyroid, ovarian and hypophyseal extracts orally without result, two injections of the gonadotropic hormone sufficed to reestablish the menstrual flow. The authors think this hormone therapy is valuable in oligomenorrhea, amenorrhea, dysmenorrhea and other conditions of ovarian insufficiency, but in menorrhagic conditions discrimination is required, as these are usually due to hypersecretion of folliculin. It is sometimes indicated in the menopause but is without effect if the ovaries are incapable of responding to hormonal stimulation. The combination of antehypophyseal opotherapy with administration of folliculin and lutein is sometimes advisable. Contraindications to gonadotropic hormone therapy are few. One should make a gynecologic examination before prescribing this opotherapy, to avoid provoking congestive reactions in women with pelvic inflammations.

Folia Medica, Naples

18: 209-276 (Feb. 29) 1932

Gout. P. Castellino.—p. 211.
*Case of Intestinal Amebiasis with Rare Extra-Abdominal Complications. A. Vasaturo.—p. 239.

Intestinal Amebiasis with Rare Extra-Abdominal Complications.—Vasaturo reviews the literature on amebiasis, stating that extra-abdominal symptoms of it are rare. He presents the symptomatology of the disease as anorexia, gastric dyspepsia, general malaise, fever, diffuse abdominal pains, mucosanguineous diarrhea with painful contractions of the diaphragm, and dysentery. The malady may be either chronic with exacerbations sometimes assuming the dysenteric type and with symptoms relating primarily to the digestive tube, or acute with serious complications often occurring extra-abdominally. It assumes the appearance of a serious infection: high fever, asthenia, despondency, stupor, mucosanguineous diarrhea and enterorhagia. Emetine and other therapeutic means may lessen pain but do not effect a cure. The author recognizes the possibility of migration of the protozoon through the lymphatic channels, especially regarding the organs connected with the perineum. The lack of cutaneous resistance and the irritation of the skin of the para-anal region contribute to the spread of the protozoon brought there either by the passage of fecal matter or by dirty objects or hands contaminated with amebas. The ameba often occurs in the respiratory organs in cases of pulmonary abscess, empyema or bronchopneumonia. Metastases occur through the lymphatics and blood vessels. In amebic complications of the oral cavity, the ameba travels from the larynx to the bronchial ramifications, destroying the epithelium of the mucous membrane of the upper air passages and the secretion of the membrane, which protects the respiratory tract from invasion by bacteria. In the author's patient the ameba must have invaded the periosteum, detaching it and following the subperiosteal route, and reached the malar, nasal and lacrimal bones, subsequently producing dacryocystitis. It invaded next the oculopalpebral region and the frontal bone, giving rise, in symbiosis with other bacteria, to orbital cellulitis and necrosis and gangrene of the eyelids and eyeball.

Policlinico, Rome

39: 361-400 (March 7) 1932 Practical Section.

Bronchospirochetosis. L. Cannavò.—p. 363.
Connective Tissue Cysts of Spermatic Cord. C. Giacobbe.—p. 369.
*Clinical Contribution to Knowledge of Pancreatic Cysts. G. de Simone.—p. 375.

Clinical Aspect of Pancreatic Cysts.—De Simone states that pain symptoms of pancreatic cysts are manifested either by dull sensations at the epigastrium or more frequently by intense celiac neuralgia lasting sometimes for several days. The pain crises are due to the sudden change in the size of the cysts by transudation or by hemorrhages. A pancreatic cyst situated between the leaves of the mesocolon can assume the appearance of a mesenteric cyst, but this seldom occurs. In two cases studied by the author there were definite symptoms of liver cysts: marked eosinophilia, positive intradermal reaction to cyst fluid, and gradual increase without oscillations in volume. Surgical operation confirmed the diagnosis of pancreatic cyst. The method of operation employed, evacuation by marsupialization, resulted in a complete cure, after the fistulous tract had closed a few weeks later.

Deutsche medizinische Wochenschrift, Leipzig

58: 685-722 (April 29) 1932. Partial Index

*Origin and Treatment of Sanguineous Apoplexy. K. Westphal.—p. 685.
Anatomic Considerations on Pathogenesis of Sanguineous Apoplexy. K. Neubürger.—p. 690.
*Yawning. A. Peiper.—p. 693.
*Is It Advisable to Anesthetize Skin by Ethyl Chloride Spray Previous to Use of Galvanocautery? F. Dietel.—p. 698.
*Clinical Significance of Creatinuria. C. Brentano.—p. 699.
Observations on Pancreatitis. C.-H. Goldmann.—p. 701.
Potassium Iodide in Tertiary Syphilis. F. Bruck.—p. 701.

Origin and Treatment of Sanguineous Apoplexy.—Westphal shows that apoplexy is an extremely complex process. The pathologic vascular function of arterial hypertension, the great susceptibility of the gray matter in the basal ganglions to ischemia, and the predisposition of the gray matter for chemical changes act together to produce sanguineous apoplexy. In discussing the treatment the author states that venesection, even if from 300 to 500 cc. is withdrawn, is of little avail since the decrease in blood pressure, which it is intended to produce, often does not occur. As more effective he considers injections of a 40 per cent solution of dextrose. These injections of 50 cc. each are repeated for ten days, and they effect a more rapid disappearance of the paralytic symptoms than a merely expectant therapy. The softening of the brain of senile arteriosclerosis reacts less favorably to this measure. It was also found that if procaine hydrochloride is added to caffeine a better blood perfusion of the ischemic regions is effected than if only caffeine is given. The favorable effects of the dextrose injections can often be improved by lumbar puncture with withdrawal of large amounts of spinal fluid. For the prophylaxis of apoplexy, practically all the measures are advisable that have been recommended for the treatment of hypertension. The author emphasizes medication with small doses of sodium thiocyanate and a diet deficient in fats and meats.

Yawning.—Peiper advances the theory that yawning is nothing but a respiratory movement, which is produced by a reduction in the nervous excitability of the respiratory center. Considered from the evolutional point of view, the yawning center is a lower form of the respiratory center, and the latter ordinarily inhibits the yawning. When, however, during fatigue these inhibitions are reduced, the yawning center dominates temporarily. Thus one does not yawn to counteract fatigue but as a result of fatigue.

Inadvisability of Simultaneous Use of Ethyl Chloride Spray with Galvanocautery.—Dietel shows that under certain conditions ethyl chloride can become inflammable. He admits that the likelihood of a fire is somewhat remote but nevertheless thinks that the fire danger is sufficient to contraindicate the simultaneous use of the ethyl chloride spray and the galvanocautery.

Clinical Significance of Creatinuria.—Brentano maintains that creatinuria is a comparatively frequent manifestation. It is observed in diabetes, in thyrotoxicosis, in pregnancy, in fever, in starvation, following muscular exertion, following intense cooling, and in cachectic conditions. The common factor in all these conditions is a disturbance in the carbohydrate metabolism, and it is shown that the interaction between the creatine and the carbohydrate metabolism can take place only in the muscles. Because the main substance in the carbohydrate metabolism in the muscle is glycogen, the author assumed that glycogen deficiency plays an important part in the development of creatinuria. Tests proved that in all cases of creatinuria there is a considerable decrease in the glycogen content of the skeletal muscles, and that all processes that reduce the glycogen content of the skeletal muscles also produce creatinuria.

Deutsches Archiv für klinische Medizin, Berlin

173: 1-122 (April 20) 1932

Free and Combined Amino Nitrogen in Deproteinized Blood and Tissues, Particularly in Diseases of Liver. E. Becher and E. Herrmann.—p. 1.
Free and Combined Amino Nitrogen in Deproteinized Blood and Tissues in Essential Hypertension and in Renal Diseases. E. Becker and E. Herrmann.—p. 23.
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*Clinical Aspects and Therapy of Acute Anterior Poliomyelitis in Adults. F. W. Bremer.—p. 58.
Diagnosis of Bronchial Tumors. L. Hess and J. Faltitschek.—p. 68.
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*Eosinophilic Cystitis. Cäcilie Westphal.—p. 104.
Epinephrine Susceptibility in Cerebral Disorders. S. Molnár and A. Leszler.—p. 109.

Relations Between Insensible Perspiration and Basal Metabolism.—According to Magendantz, insensible perspiration cannot be explained merely as a physical process: he is convinced that there is a nervous regulatory mechanism. He found that with increased basal metabolism a greater percentage of the body heat is eliminated by perspiration, while at the same time a correspondingly smaller percentage is eliminated by heat radiation. In ninety-seven patients without disturbance in the water economy, the author determined in about 500 tests the "basal" perspiration and the basal metabolism, immediately following each other. In only seventy cases did the values correspond, and for this reason the author considers the determination of the perspiration as not suitable for measuring the basal metabolism. He generally found the amount of perspiration too large in comparison with the basal metabolism in vasolabile, overexcitable persons, particularly in patients with exophthalmic goiter. On the other hand, a considerable decrease in the insensible perspiration was observed in several cases of endogenous obesity. Such an unusual reduction in perspiration seems to be a typical sign of endogenous respiration.

Acute Anterior Poliomyelitis in Adults.—Bremer shows that in adults the clinical course of acute anterior poliomyelitis is somewhat different than in children. The preparalytic stage lasts somewhat longer and the transition to the paralytic stage is not sudden but gradual, sometimes requiring several weeks. The symptoms of meningeal irritation are more pronounced than in children, and atypical cases are more frequent than was formerly believed. In regard to the treatment, it is stated that serotherapy in adults is still effective during the paralytic stage, whereas it has been generally observed that in children it is effective only during the preparalytic stage. The most effective serum is convalescent serum, but because it is not always available the author employed Pettit's serum, which is prepared by injecting into a horse, portions of the spinal cord and of the pons varolii of monkeys that have been infected with the virus of poliomyelitis, and later withdrawing blood from the horse. The results obtained with this serum were satisfactory.

Eosinophilic Cystitis.—Westphal describes several cases of so-called eosinophilic cystitis, with clinical aspects that differ from the usual forms of cystitis. The sediment contains an unusually large number of eosinophilic cells that form mucous-fibrinous flakes. The patients usually complain of piercing, pricking pains in the bladder and there is a great tendency for spasms. The attacks of tenesmus are largely due to psychic influences. The vesical mucous membrane is predisposed to capillary hemorrhages, and considerable amounts of mucous and fibrin are eliminated. The inflammatory symptoms are usually more exacerbated than remedied by the customary medicaments, but general alkalization is usually helpful. In many respects, especially in the psychic factor, the disease resembles asthma. The practical significance of its correct diagnosis lies in the fact that the presence of eosinophilic cells in the sediment indicates the pathogenesis and by this gives pointers for an effective therapy.

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Klinische Wochenschrift, Berlin

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*Cause of Rustbrown Coloration of Sputum in Pneumonia. H. Schade and H. von Pein.—p. 713.
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Cheap, Reliable Method for Production of Experimental Xerophthalmia in Rats. J. Avellar de Loureiro.—p. 727.

Multiple Chronic Articular Disease and Rheumatic Infection During Childhood.—In addition to other clinical observations, Fahr and Kleinschmidt report the clinical history of a child, who died at the age of 9 after suffering for three and a half years from multiple chronic articular disease. In spite of the fact that the typical manifestations of Still's disease, such as high fever and enlargement of the spleen and lymph nodes, were absent, the adhesive pericarditis, which is generally considered as characteristic for this disease, was present, and the exanthems that are so frequently observed in Still's disease also recurred several times. There also existed a myocarditis, which as yet has not been reported in similar cases. Whereas the roentgenograms, which, to be sure, were made a considerable time before death, showed only atrophy of the bone but no changes on the articular surfaces, the postmortem examination revealed a noticeable atrophy of the tissues of the articular surfaces. The authors think that if everything is taken into consideration the case can be classified as atypical Still's disease. In the thickened periarticular tissues there were round cell infiltrates, but rheumatic granulomas were found neither here nor in the heart. In view of these observations the authors reject a relationship of this condition to rheumatic granulomatosis, as had been assumed by others. They think that the clinical and anatomic aspects speak for a chronic infectious disease. The fact that specific processes were not detected in the histologic examination, as well as the tendency of the nonspecific inflammation for a definite localization, induces the pathologist to think of an allergic reaction to a perhaps common pathogenic agent. Streptococcus viridans, which was noted by another investigator in a typical case of Still's disease, could not be demonstrated; but the authors do not consider this as a proof against the etiologic significace of this micro-organism but point out that its demonstration is difficult and advise in all unclear cases repeated bacteriologic examinations, which may reveal Streptococcus viridans or other types of streptococci; or, if they remain negative, it is thought possible that perhaps the infection with streptococci is secondary.

Rustbrown Sputum in Pneumonia.—Schade and von Pein, after reviewing several theories that have been advanced to explain the rustbrown coloration of the sputum in lobar pneumonia, point out that in inflammatory processes the hydrogen ion concentration is shifted toward the acid side. Tests on the sputum of patients with lobar pneumonia indicated that this is also the case in pneumonia. Discoloration of blood is produced by the transformation of hemoglobin into hematin. This transformation is effected by acidity, even by comparatively slight degrees. Spectroscopic analysis of the rustbrown sputum in pneumonia reveals a hematin spectrum, which, in view of the acidity and of the diapedesis, becomes understandable. The rustbrown color indicates a considerable acidity and small amounts of blood, both of which are characteristic for lobar pneumonia. For this reason the rustbrown sputum can be considered pathognomonic for lobar pneumonia. However, in exceptional cases the same conditions may also occur in bronchopneumonia.

Münchener medizinische Wochenschrift, Munich

79: 701-740 (April 29) 1932. Partial Index

*Changes in Leukocyte Picture Produced by Rays of Various Wavelengths. H. Küstner, G. Dreyer and W. Siede.—p. 703.
Experimental Studies with Diphtheria Toxin. Slauck.—p. 705.
Sepsis Produced by Influenza Bacillus. F. E. Koch.—p. 706.
Serotherapy and Etiology of Scarlet Fever. E. Winkel.—p. 707.
Treatment of Fat Embolism. W. Rückert.—p. 709.
*Symptomatology and Therapy of Meralgia Paraesthetica. E. Fischer and E. Krieg.—p. 710.
Casuistics on Differential Diagnosis Between Brown Induration of Lung and Pulmonary Tuberculosis. J. Tillman.—p. 712.
Clinical Aspects and Therapy of Pyelitis in Women. H. von Hoesslin.—p. 713.
Strontium and Physiologic Function of Calcium. O. Loew.—p. 718.
Significance of Metreurynter as Dilator. A. Haupt.—p. 719.

Changes in Leukocyte Picture Produced by Rays of Various Wavelengths.—Küstner and his associates first describe changes in the blood picture, which they observed following the therapeutic use of red rays. They examined the blood before the irradiation, immediately after and eight hours later. On the basis of observations on human beings, they conclude that treatment with red rays produces a considerable lymphocytosis. They maintain that the red rays do not effect this influence by way of the skin but by their deep penetration influence the blood and lymphatic system directly. In the second part of the article the authors relate their experiments on guinea-pigs that were first exposed to red rays and then to blue rays. The red rays produced a considerable lymphocytosis, whereas the subsequent application of blue rays counteracted this lymphocytosis and instead produced a leukocytosis. But when the animals were again exposed to red rays the lymphocytosis returned. The authors also tried to increase or decrease the ray action by administration of ovarian hormone. However, no noticeable differences could be produced by this method, and accordingly they conclude that the changes in the blood picture are not due to hormonal changes but to a direct influence of the rays on the blood and the body tissues. They advise that, during the therapeutic use of rays of the wavelengths from red to ultraviolet, attention should be given to changes in the leukocyte picture.

Symptomatology and Therapy of Meralgia Paraesthetica.—Fischer and Krieg show that the paresthesias in the region of the lateral cutaneous nerve of the thigh should be differentiated from other forms of neuritis. They base this differentiation on the peculiar anatomic conditions. In discussing the causes of meralgia, they mention conditions of mechanical irritation, and toxic influences. On the basis of the symptomatology, two types are differentiated; namely, one form in which the paresthetic symptoms predominate, and another form in which there exist primarily neuralgic symptoms. The authors state that they obtained the most favorable results with a perineural infiltration therapy, in which they employed an isotonic solution of antipyrine to which an alkaline preparation is added rather than procaine hydrochloride with its acid reaction. The infiltration fluid is deposited not in a single depot but in several depots, along the course of the nerve, at points where the nerve is sensitive to pressure. The infiltration is made slowly and either intracutaneously or subcutaneously, but not underneath the fascia. The authors found that in more than half the cases one series of injections was sufficient. In other cases the injections had to be repeated two or three times after intervals of from four to eight days. In one instance the infiltration therapy failed, but a later operative intervention revealed that the neuritis had been caused by pressure from a tumor. In addition to the local infiltration therapy it is of course also necessary to treat the primary disorder, which is often an infectious disease. The cases of meralgia paraesthetica that are due to flatfoot or to incomplete flatfoot stand apart in regard to their treatment in that one should first attempt the correction of the feet without resorting to infiltration therapy. In the last part of the article it is stated that the infiltration therapy can also be employed in peripheral neuralgias of different localization, as well as in chronic inflammation of articular capsules. The action mechanism of the treatment is not yet fully understood.

Strahlentherapie, Berlin

43: 601-822 (April 13) 1932

Indications for Roentgen Therapy in Skin Diseases. S. R. Brünauer.—p. 601.
Tissue Doses in Ray Therapy of Neoplasms. H. E. Martin and Edith H. Quimby.—p. 631.
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Influence of Alpha, Beta and Gamma Rays of Radium on Aerobic Respiration of Animal Organisms. J. Stoklasa.—p. 685.
*Results of Prolonged Fractional Roentgen Therapy of Malignant Tumors. A. Zuppinger.—p. 701.
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Acid-Base Equilibrium in Carcinoma of Female Genitalia. R. Krumeich.—p. 727.
*Roentgen Therapy of Syringomyelia. E. Giese and W. Ossinskaja.—p. 739.
Severe Injury of Pericardium Following High Voltage Irradiation of Precordial Region. H. Faust.—p. 749.
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Last Ultraviolet Wavelengths of Sunlight and of Skyshine in Climate Zones of Atlantic. Gertrud Riemerschmid.—p. 767.
Absolute Measurement of Short Wave Ultraviolet Irradiation of Various Lamps. O. Gaertner.—p. 775.
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Photochemical Diathermy. G. Kögel.—p. 783.
Technic of Intratumoral Radium Therapy. G. Spiess.—p. 789.
Action of Roentgen Rays on Biologic Tissues. J. Schechtmann and W. Klupfel.—p. 792.

Fractional Roentgen Therapy of Malignant Tumors.—Zuppinger points out that Coutard's method of prolonged fractional roentgen treatment has led to great changes in ray therapy, in that now many tumors can be subjected to an effective treatment, which formerly could hardly at all be influenced. He gives a report of twenty cases of malignant tumors in which the prolonged fractional roentgen treatment was employed, and in all of which the patients have been free from symptoms for more than a year. In nineteen of the cases the diagnosis was verified by the histologic examination. Eighteen of the tumors proved to be carcinomas and one a sarcoma. The neoplasms involved various structures, such as the epipharynx, maxillary sinus, cheek, tonsils, tongue, vallecula epiglottica, lateral column, larynx, pyriform sinus, vocal cords, mediastinum and parotid. Surgical treatment would have been possible in only four cases. The number of irradiations as well as the dosage varied in the different cases. The total dosage was determined by the results, for the irradiation was continued until in the region of the pavement epithelium an uninterrupted layer of fibrin had formed. In two cases radium treatment was necessary and in two others a surgical intervention was required in addition to the roentgen irradiations. The authors found that prospects for recovery are largely dependent on the extent of the regional metastases, on the size of the primary tumor, on the patient's general condition and on the histologic structure of the tumor. Prolonged fractional roentgen treatment, the author emphasizes, is not a cure-all but is advisable in tumors of the mucous membranes consisting of pavement epithelium, in which because of the location of the neoplasm a radical operation is not advisable. It can also be resorted to in operable cases when the patient does not consent to a surgical intervention or when the operation involves serious mutilation and the histologic examination indicates that the tumor is sensitive to ray therapy. Prolonged fractional roentgen therapy should of course not be resorted to when another method that is more rapid and less trying for the patient promises the same results.

Ten Years of Ray Therapy of Sarcoma.—Rózsa reports that in the decade from 1920 to 1930 he resorted to irradiation in 129 cases of sarcoma. After three years the percentage of cure was 22 and after five years 14.6. He thinks that the therapy of sarcomas should remain mostly surgical, for the percentage of permanent cures after operations is larger than that obtained with irradiation. However, before resorting to operations that lead to disfigurement, one should give irradiation a trial. In certain sarcomas, such as those of the tonsils and of the nasopharynx, irradiation is apparently superior to surgical treatment; in adenosarcoma it is of the same value. Sarcoma of the pleura and of the uterus and postoperative relapses in maxillary sarcomas do not react altogether unfavorably to irradiation. Larger doses of rays did not seem to improve the results.

Roentgen Therapy of Syringomyelia.—Observations made in the course of five years and on a considerable material convinced Giese and Ossinskaja that roentgen therapy is the method of choice in syringomyelia. In about half the cases it effected lasting improvements, in others the progress of the disease was arrested, but in 20 per cent of the cases the process progressed in spite of the roentgen treatment. In the newer cases the percentage of favorable results was larger; however, there were also cases of longer duration that reacted more favorably than some newer cases. This is most likely due to the character of the pathologic process, to the presence of a gliosis or of cavities. In cases of cavity formation, roentgen treatment was of little avail. Particularly effective was the roentgen therapy in the trophic sphere; that is, it effected rapid cicatrization of wounds, resorption of articular exudates and cure of fistulas. Improvements in the sphere of the skin sensibility were more frequent than in the motor sphere. The tactile and pain sensitivity of the skin improved in the majority of cases simultaneously and earlier than the temperature sensitivity. The pareses of the lower extremities improved in a larger number of cases than the pareses of the upper extremities, which may be explained by the fact that roentgen therapy improves the function of the pyramidal tracts more than that of the motor cells of the cervical enlargement. It is known that in cases of cervical syringomyelia the pareses of the lower extremities are caused by a lesion of the pyramidal tracts, but the pareses of the upper extremities are due to a lesion of the motor cells in the anterior cornus of the cervical enlargement of the spinal cord. On the basis of observations in a considerable number of cases of syringobulbia the authors conclude that, in spite of the fact that syringobulbia is a more serious condition than syringomyelia, roentgen therapy is more effective in syringobulbia in that it influences the bulbar symptoms and sometimes causes their complete disappearance. The favorable results of roentgen treatment of syringomyelia are due to the destructive action of roentgen rays on the gliomatous tissue. Since the process develops later in the brain stem than in the spinal cord, it becomes clear why roentgen therapy produces better results in syringobulbia than in syringomyelia, for syringobulbia is generally a more recent process than syringomyelia.

Wiener klinische Wochenschrift, Vienna

45: 513-544 (April 22) 1932

Acute Gastritis. H. Hamperl.—p. 513.
Injuries of Central Nervous System. E. Ranzi and P. Huber.—p. 514.
*Dietary Treatment Following Surgical Interventions on Stomach. H. Neuffer.—p. 518.
Etiology and Therapy of Acute Yellow Atrophy of Liver. N. Klein and S. Szentmihályi.—p. 520.
Cultivation of Tubercle Bacilli According to Löwenstein from Tissues of Tuberculous Skin Diseases. A. Matras.—p. 524.
Cure of Acute Psychosis by Somatic Purging Treatment. N. Galatzer.—p. 525.
Differential Diagnosis and Therapy of Icteric Conditions. E. Lauda.—p. 526.
Various Types of Hemorrhagic Diathesis and Their Treatment. U. Strasser.—p. 530.
Disturbances to Be Differentiated from Disease of Vermiform Appendix. G. Lotheissen.—p. 532.

Dietary Treatment Following Operations on Stomach.—After calling attention to the changes that are produced in the digestive tract by operations on the stomach, Neuffer discusses postoperative complications such as vomiting, diarrhea and dyspepsia. He then shows what foods are advisable to avoid these complications. As most suitable he considers a diet that is rich in carbohydrates but deficient in proteins and in fats, for carbohydrates are readily digested without the aid of the stomach, but proteins require for their digestion gastric juice and should therefore be limited. The fat intake should be restricted because of the retarded flow of the duodenal juice, but gradually, as its flow and the acid secretion increase again, a larger amount of fat may be given. The author has followed these principles in 132 cases of extensive gastric resection and in eight cases of gastro-enterostomy. As a result of this treatment, postoperative complications were almost entirely absent. The slight loss of weight that followed the operation was quickly regained. The majority of the patients could be discharged with an adequate diet on the tenth or twelfth day. In the course of the first four weeks the patients usually gained about 3 Kg. (6⅗ pounds). Whether the diet can or cannot prevent late complications, such as peptic ulcer of the jejunum, relapse of the ulcer, cholecystopathies, pancreatic disturbances or anemia, cannot be stated, since the time of observation is as yet comparatively short. In the conclusion the author emphasizes that the patient who has undergone resection of the stomach cannot be considered as cured but requires a careful dietary after-treatment. Immediately after the operation, this treatment should follow the principles discussed. When the patient is discharged, he is given written dietary regulations telling him what he is permitted to eat and what he should not eat. He is advised to follow these regulations for at least two or three months. After that the diet can gradually be changed, but it is advisable to repeat the restricted postoperative diet from time to time to avoid late complications.

Zeitschrift für Tuberkulose, Leipzig

64: 239-318 (April) 1932. Partial Index

Robert Koch: Fiftieth Anniversary of Discovery of Tubercle Bacillus. A. Calmette.—p. 239.
*Occurrence of Tubercle Bacilli in Hen Eggs. Stefania Lichtenstein.—p. 245.
*Tubercle Bacilluria as Manifestation of Generalized Infection in Pulmonary Tuberculosis. H. Deist.—p. 256.
Roentgenoscopy in Pulmonary Tuberculosis. A. Engelhard and H. Sielmann.—p. 267.
How to Supervise Persons Living with Patients Who Have Open Tuberculosis: Regular Roentgen Examinations or Hygienic Education. H. Braeuning.—p. 281.
Regular Examinations of Persons Living with Patients with Open Tuberculosis. J. E. Kayser-Petersen.—p. 289.

Occurrence of Tubercle Bacilli in Hen Eggs.—Lichtenstein tested 525 market eggs of various grades, 216 eggs from hens belonging to a group that was infected with tuberculosis, and 38 eggs that had been inoculated with the bacilli of chicken tuberculosis. In the market eggs she twice found living virulent tubercle bacilli (0.38 per cent), and in the eggs from infected hens she detected them once (0.46 per cent). From the artificially infected eggs, tubercle bacilli could still be cultured 167 days after the inoculation. Microscopic examination revealed tubercle bacilli 198 days after the inoculation, when the last egg was tested. Because with one exception the eggs from chickens with tuberculosis were free from virulent bacilli, the author concludes that the danger of obtaining infected eggs on the market should not be overestimated.

Tubercle Bacilluria as Manifestation of Generalized Infection in Pulmonary Tuberculosis.—Deist cites reports from the literature which indicate that the opinions are divided as to whether tubercle bacilluria may occur in extrarenal tuberculosis. He then relates his own studies on this problem. In summing up his observations in animal experiments and on human subjects, he states that the kidney is permeable for tubercle bacilli when it itself is free from tuberculous infection. This observation disproves the claim made by some that the presence of tubercle bacilli indicates renal tuberculosis. The author also emphasizes the importance of this factor for the combat of tuberculosis, but he sees the greatest significance of tubercle bacilluria in the fact that it proves tubercle bacillemia, for the bacilli that are present in the urine can originate only in the blood. He admits that in some cases of tubercle bacilluria the Löwenstein method failed to demonstrate the presence of tubercle bacilli in the blood, but he ascribes this to the fact that the entire urine can be examined, whereas only minute portions of blood can be tested. He thinks that the indirect proof of bacillemia by bacilluria will be of great importance in investigations on the hematogenic dissemination of tuberculosis in the organism.

Zentralblatt für Chirurgie, Leipzig.

59: 1137-1200 (May 7) 1932. Partial Index

Hypernephroma; Noteworthy Early Cases and Resection in Late Cases. P. Rosenstein.—p. 1138.
Cholecystectomy: Critical Remarks on Gallstone Surgery with Recommendations for Changes of Customary Methods. A. Plenk.—p. 1144.
*Cure of Osteomyelitic Cavities by Approximating Their Walls. N. Grzywa.—p. 1149.
Operation for Large Hernias of Abdominal Scars. A. Schlesinger.—p. 1151.
Gas Peritonitis. A. Angerer.—p. 1155.
Surgical Cure of Intestinal Phlegmon: Case. M. Fossel.—p. 1160.
Isolated Traumatic Subcutaneous Tearing of Duodenum. E. Sereghy.—p. 1165.

Cure of Osteomyelitic Bone Cavities by Approximating Their Walls.—Grzywa states that he employed filling of bone cavities, especially those of the calcaneum, with changing success. In suppurating cavities, the filling was frequently expelled again. Only when the process was sterile or extremely inactive did the filling heal in. The author thinks that the failures were largely due to the fact that his patients, being natives of Sumatra, walked barefoot and thus injured the scar and caused a relapse. He relates his observations on one patient in whom filling of an osteomyelitic cavity on the calcaneum failed twice. Accordingly he decided to try to bring the walls of the cavity together and thus eliminate the cavity. After all diseased tissue had been excised, the walls were pressed together and then fixed by catgut sutures of the periosteum. The wound now healed by primary intention without fistula formation. After four weeks the patient was able to walk with a plaster-of-paris cast, and after another two weeks he could walk without it. Roentgenoscopy showed a solid healing of the bone. The patient has now for several months been entirely free from difficulties. The author considers this procedure also helpful for the treatment of cavities in the diaphysis of bones, but in the diaphysis only one wall should be moved, so that the continuity of the bone is preserved.

Sovetskaya Vrachebnaya Gazeta, Leningrad

March 15, 1932 (number 5) pp. 257-320. Partial Index

*Surgical Treatment of Scarlatinal Otitis. P. G. Lepneva.—p. 265.
*Improvized Endo's Lactose Medium. M. A. Zelikinoy, M. I. Konevskoy and E. T. Pavlovoy.—p. 303.

Surgical Treatment of Scarlatinal Otitis.—Lepneva states that there is no uniformity in the various theories on the etiology and hence treatment of scarlatinal otitis. She agrees with other workers that the complications in the ear secondary to scarlet fever may be of two forms. The first form does not vary from ordinary otitis; the second form is different from ordinary otitis in the depth and extent of the infection, which is characterized by rapid spread to the temporal bone. The first form often passes into the second, but the deep forms predominate in scarlet fever. The great number of deep seated infections lead many workers to believe that the scarlatinal process in the ear has a tendency to extend to bone, to the facial nerve, the internal ear and the cranium. Early paracentesis and early trephination of the mastoid process may check the infection and its tendency to spread. During the period 1930 to 1931 among 380 patients with scarlet fever in the infectious disease clinics of a military medical academy, ninety patients, or 25 per cent, had otitis complications ranging from catarrhal otitis to necrotic otitis: fourteen of these were catarrhal and in the rest there was a spontaneous or postparacentetic puriform discharge. A paracentesis was rarely performed on the first day of the examination and in the whole group there were only ten such interventions. Among seventy-six patients with puriform otitis, thirty-nine had symptoms of a complication of the mastoid process and in ten trephination was indicated, while twenty-four patients with mastoiditis improved without trephination. There were only five cases of anergic forms of necrotic scarlatinal otitis which involved the whole ear. The author's conclusions are as follows: The greater chronicity of scarlatinal otitis in contradistinction to ordinary otitis is a consequence of a lowered body resistance. Scarlatinal otitis extends intracranially more often than ordinary otitis. Disturbances of the ear offer the best indications for paracentesis and trephination of the mastoid process. In toxic forms of scarlet fever with almost entire absence of body resistance, trephination is contraindicated. In view of the late appearance of scarlatinal mastoiditis (in many instances after the patient has been discharged), patients should be carefully watched until all the characteristic symptoms have disappeared. Treatment in all cases should be based not on isolated symptoms but on the whole clinical picture, and one should treat "the patient rather than the disease."

Improvised Endo's Lactose Medium.—Zelikinoy and his co-workers report that a whey medium can be substituted for the classic Endo-Drigalski medium. They used the technic recommended by Gartokha, as follows: To milk warmed in a water bath at 80 C., one sixth of its volume of a solution of 10 per cent calcium lactate is added, and the whole quantity is filtered after the casein has been precipitated. Another method is to allow the milk to turn sour for twenty-four or forty-eight hours, heat it from fifteen to twenty minutes in a water bath at 100 C. for complete precipitation of the casein, and then filter it through linen. The whey prepared by either method is made alkaline to p_H 7.4, heated from twenty to thirty minutes at 100 C., filtered through paper, and mixed with 3 per cent agar in the ratio of 1 to 2. To this whey agar is added the usual quantity of a 10 per cent solution of sodium sulphate and concentrated alcoholic solution of fuchsin. Either meat peptone or yeast agar is used. Other methods of preparing whey are one in which rennin is added and another in which Bacillus bulgaricus is used. The authors conclude that deficiency of lactose may be remedied by substitution of whey. The appearance of the Endo medium prepared with whey and the differentiating qualities in the culture of coli-typhoid-paratyphoid and dysentery bacteria are similar to the classic Endo medium. The monosaccharides present in whey do not diminish the distinct differentiating qualities of the Endo substitute.

Ukrainskiy Medichniy Arkhiv, Kharkiv

6: 1-128 (No. 1) 1931

Pathologic Anatomy and Geographic Scope of Kussmaul's Periarteritis Nodosa. Twenty Cases. M. Melnikov-Razvedenkov.—p. 11.
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Homeopathy and Otorhinolaryngology. A. Kekalo.—p. 115.
Aims and Work of Metchnikoff's Institute for Experimental Medicine, Biology and Morphology. Ya. I. Lifshitz.—p. 124.

Growth of Malignant Tumors During Pregnancy.—Mishchenko states that during pregnancy the secretion of the hormones of the organism becomes complex and the chemical state of the body becomes transformed. The secretion of the anterior lobe of the hypophysis increases and as a result the prolan hormone of the blood increases a thousandfold. Chemical activity causes an increase in the corpus luteum. Chemical irritation caused by the growing fetus, the uterus and placenta brings about complex changes which make it difficult to determine where the physiologic process ends and the pathologic process begins. During pregnancy all the functional reserve of the organism is centered on the developing fetus, while in the mother organism there is a scarcity of nutritional elements. This revolutionary state of metabolism is recognized in the growth of malignant tumors. The study includes sixty experiments consisting of rat sarcoma (Charkow strain), the Jansen rat sarcoma, and the Flexner-Jobling carcinoma. The author concludes that the period of pregnancy has an inhibitory influence on the growth of tumors; it may check or entirely suppress them, whereas the period of lactation increases the growth, so that a previously resorbed growth may be reawakened. During pregnancy the resorption and assimilation is great while the building up process is decreased. The oxidative processes and metabolism are changed in the gravida, while during lactation some of the metabolic processes are similar to the normal. During nursing, more food is used. This influences the nitrogen metabolism, but the nitrogen decomposition products are not as variable in the period of lactation as in the normal period. The oxidative process is more intensive during lactation. During pregnancy there is a greater percentage of oxidized nitrogenous products, but the purine bases are decreased, while during lactation there is no great difference between the content of urine nitrogen and urea nitrogen and between urine nitrogen and urea of the purine bases. Thus, the qualitative and quantitative metabolism determines the condition of the mother organism and the fetus, and the static condition due to the fetus influences malignant growths.

Influence of Intravenous Injections of Distilled Water on Blood.—Ginsburg states that intravenous injections of distilled water have a distinct influence on the blood of rabbits. This influence is noticed for injections of volumes of 8 to 10 cc. per kilogram of body weight, while larger doses are fatal. The reaction of the blood so far as the leukocytes are concerned is demonstrated in two phases: In the first phase there is a leukopenia, in the second a definite leukocytosis, and during both phases a deviation of the blood picture to the left and a strong febrile reaction. This is due to the reaction of the parenteral proteins. It may be that the escape of hemoglobin during the hemolysis of erythrocytes is due to such a protein reaction. On the basis of his experiments the author believes that intravenous injections of small volumes of distilled water may be a good physiologic method of autoprotein therapy.

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Binuclear and Polynuclear Sympathetic Ganglion Cells in Man. O. Chernyakhivskiy.—p. 7.
*Pathogenesis of Xanthomatosis. S. Minkin.—p. 17.
*Mechanism of Intussusception. B. Gaisinskiy.—p. 36.
Influence of Specific Therapy on Blood Sugar in Syphilis. L. G. Khristin.—p. 46.
Oxyquinoline Sulphate and Vaccines in Protein Therapy. O. S. Kotsevalova-Gerbova.—p. 57.
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Ukranian Word Tables for Testing Hearing. M. Bezkrobniy.—p. 68.
Hypertonia. P. Litsin.—p. 72.
Bone Regeneration. O. Meshchaninov.—p. 89.
Improved Method for Making Aptitude Tests. E. Khorshak.—p. 93.
Probe for Examination of Nasal Cavity. S. Mikhailovskiy.—p. 96.
Gaucher's Disease: Case. A. Sokolov.—p. 98.
Congenital Hernia of Diaphragm: Case. V. I. Oshkaderov.—p. 100.
Acute Inflammation of Meckel's Diverticulum. V. V. Popov.—p. 106.
Generalized Tuberculosis with Abdominal Symptoms. A. A. Juravel.—p. 111.

Pathogenesis of Xanthomatosis.—The personal observations of Minkin consist of two forms of xanthoma. He discusses the etiology and the pathology, including the chemistry and the lipolytic ferments of the xanthomatous tissue and the blood. The histologic and histochemical examinations of the affected regions of the skin and the achilles tendons demonstrate a cholesterol-fatty infiltration localized in the tissues and intracellular spaces. Chemical analysis of this infiltration indicates a variability in the quantity of cholesterol: the skin from the elbow of one patient contained 10.3 per cent of fat and of the total fat 19.9 per cent was cholesterol. In the achilles tendons there was 10 per cent fat, of which 78.5 per cent was cholesterol. On the basis of his results, the author concludes that the cholesterol content depends on the presence of more or less connective tissue. There was also a variation in the fat and especially cholesterol of the blood. Excised lipoid tissue from the patient did not show any ferment in contradistinction to normal tissue. The final conclusion is that xanthomatosis is a result of a deficiency in the lipolytic ferments and that the latter is closely connected with a disturbance in the glands of internal secretion.

Mechanism of Intussusception.—Gaisinskiy reviews the literature and gives the case histories of two personal observations of intestinal invagination with consequent intestinal obstruction. One patient was an infant, aged 6½ months, with a diagnosis of an invaginated ileum. During surgical intervention it was found that the small intestine was invaginated into the cecum and partly into the ascending colon. The second patient, a man, aged 62, had a lipoma with invagination into the small intestine. Resection of the invaginated parts and anastomosis was followed by recovery. Most of the reports in the literature show that the incidence of intestinal invagination is higher among children (from 70 to 80 per cent) than it is among adults. Among the various forms of invagination, the ileocecal forms appear most often. Pathologicohistologic examination classes invagination as a form of obstruction, between obturation and strangulation. The spastic theory may also be considered in the mechanism of invagination.

Hygiea, Stockholm

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*Glandular Fever. P. Selander.—p. 257.
Rare Complication in Delivery (Hematoma in Round Ligament of Uterus). N. G. Nordenson.—p. 264.

Glandular Fever.—The third of Selander's three cases he is inclined to regard as a transition form between lymphatic leukemia and infectious mononucleosis; the differential diagnosis, which was impossible in the earlier stage of the condition, rested mainly on the favorable outcome.

to almost all of the problems which he set himself to solve? In science, in art, in music, in business and in public life we recognize all grades of achievement. To his chosen field each man brings a combination of characteristics—mental, physical, emotional and social—which help to determine the measure of his attainments. It is the association of these personal qualities in a human being that enables him to express the "art" in his work. A science, after all, is built up of the added accomplishments of many individuals. There is art in medicine; but it is a fundamental component of medical science, whether this concerns itself with investigation or with the care of the sick.

It has already been stated that medicine had its beginnings in the desire of man to alleviate the sufferings of his fellows who were afflicted with disease. Therapeutics, then, may be regarded as the foundation on which was built the superstructure of medical science. Certainly, therapy is an integral part of medicine, and any scheme that aims to divorce these two retards the development of both.

The therapeutic aspect of medicine concerns itself with all of the procedures that may modify the natural course of disease. Such procedures are commonly carried out with the idea of alleviation or cure. But often the study of the effects of various manipulations throws valuable light on the phenomena of disease itself. Investigation in therapeutics is obviously essential for progress, and the rules for conducting it are the same as those which are applied to the pursuit of any other scientific problem. In therapeutics there is especial need for comparative experimentation in order to establish beyond question the relationship between cause and effect. When imperfect knowledge still prevails, empiricism in practice is permissible. But it is to be sanctioned only until the scientific method of examination by means of experiment has afforded either justification or condemnation. How often has understanding, based on fact, led to the discarding of remedies which generations of our forefathers, with the smug satisfaction of ignorance, have regarded as indispensable!

Not only the methods of therapeutic approach, but the individual case, must be considered in the light of scientific experiment. Each patient presents a problem differing from that of every other patient because of the individual idiosyncrasies that are inherent in living organisms. It is, accordingly, sometimes necesssary to follow the method of trial and error. But of one thing the physician should always be convinced in his own mind, namely, that the remedy tried will not be harmful. The desire to help inspires action. Yet not infrequently misdirected therapy, though well intentioned, causes more damage than would result from failure to interfere with nature's plans for repair.

In the management of human beings, personal relationships must inevitably play a prominent rôle. Consciousness on the part of the patient that his physician is thoroughly grounded in the principles of his profession favors the development of a receptive and cooperative state of mind. But this is not enough. The qualities that enter into the make-up of the personality, many of them only remotely concerned with scientific attainment, often exert a dominant influence. It is the combination of intellect and character that defines the therapeutic artist.

There has always been much talk concerning the value of experience. Medical experience does not consist solely in doing the same thing many times or in seeing a great number of patients. For one may see without perceiving, and one may observe with a mind that does not understand. Experience represents the result of thoughtful reflection on the phenomena observed and of drawing valid conclusions from them by the method of deduction. Such experience is accumulated by the purposeful coordination of one's own observations and by proper consideration of the work of others. A good physician is he who can apply in the individual case, in diagnosis and therapy, the knowledge and the wisdom that he has acquired. And when he can foretell with a reasonable degree of accuracy the outcome of a series of related events such as constitute the record of disease, then does he approach most closely to the ideal of scientific attainment.

In Latham's "Lectures on Diseases of the Heart," published in 1845, there appears this paragraph, which epitomizes admirably the creed of the practitioner:

> Medicine is a strange mixture of speculation and action. We have to cultivate a science and to exercise an art. The calls of science are upon our leisure and our choice; the calls of practice are of daily emergence and necessity. Science may minister to practice much or little. But whether science help us or fail us, whether its instrumentality be sufficient or defective, still we must act. We are bound to the constant endeavor of doing the best we can whether upon a perfect or an imperfect knowledge.

31 East Seventy-Second Street.

TUBERCULOSIS IN TENNESSEE

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The Tennessee State Health Department five years ago embarked on a program of state-wide control of tuberculosis, with the establishment of mobile diagnostic units that carried facilities for diagnosis and follow-up care into every county in the state. The central and dominating idea behind this program has been to bring about finding every case of tuberculosis as early as possible and placing all cases found under adequate medical and nursing care. These clinics have not been merely receptive. They have not been attached to any great central institution or domiciled in any one county or town where applicants are given examinations. Rather they have been mobile in every sense of the word. With only the simple equipment of a portable x-ray machine and the human resources of trained physicians and nurses, these clinics have gone out into the byways and found the cases. The best work, of course, has been done in the counties with full-time health personnel where the clinics are carefully organized in advance by the county health officer and nurse, with the nurse doing the follow-up work as part of her generalized nursing activities. In the unorganized counties (50 of them) a corps of 6 field nurses has

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performed as much of the same type of work as is possible with such a small staff. The volume of work performed by the 3 clinicians, with the aid of the staff nurses in unorganized counties and the health unit personnel in organized counties, has been unusual. In the first four years 1,794 clinics have been held, 28,131 examinations made by the clinicians and 5,243 positive cases found and brought under the active direction of their personal physicians. Five years is a short time in which to measure results of such a program, and such measurement will not be attempted in this discussion.

At the time this program was started, the death rate from tuberculosis in Tennessee (144 per hundred thousand population) was so high in comparison with the general experience in the United States as to constitute a definite challenge to the health agencies. The reason for this divergence in mortality rates needed to be sought out, and the differential factors removed, as far as possible. This aim has been constantly kept in mind in every phase of the Tennessee program, that is, the finding out of what conditions exist here that are responsible for the high incidence and death rates for tuberculosis. On the way it is hoped that some light will be thrown on some unsolved problems in the epidemiology of tuberculosis. In organizing the field case-finding clinics, every type of lead to new cases that offered promise has been followed out in the various counties. Death records were used as the most evident and easily accessible lead to other cases in the same family. Cases diagnosed and reported by physicians have been used in a similar way. Tuberculin testing among school children is constantly being more extensively used in Tennessee, and as rapidly as possible the positive reactors are being followed up in the home. In whatever way the entry into the family has been obtained, the attitude has been that tuberculosis is a familial disease and one case should lead to a search for others by a complete examination, including roentgenologic study of every member of the family. This has led to the finding of the type of case in which the best results can be expected, namely, the early or minimal case.

In 1931 the tuberculosis death rate from tuberculosis (all forms) in Tennessee was 109 (about 97 for pulmonary tuberculosis alone). This rate represents a continuous trend downward from the rate of 198 for 1917. It still remains so high as to place Tennessee near the top of the list of states of the Union for tuberculosis mortality. This unenviable preeminence has led to the establishment of the state control program already sketched, but this activity is only a beginning. A search for basic causes was clearly indicated in order that control activities might be extended. The clinical service with a heavy and exacting schedule has kept careful records and is adding much to our increasing perception of the factors involved. In addition to this, a more careful and more concentrated study in a smaller area appeared necessary. With the securing of financial aid from outside sources, such a study was begun and has now been under way for two and one-half years.

At the start this special study had mapped out for it a more intensive program than was possible in the control clinics, with their necessarily rapid shift from county to county. Its activities were limited for a year at a time to a single county, while most careful epidemiologic records of every family studied were kept. These records, in addition to clinical and roentgenologic examinations, economic, environmental and occupational circumstances, have been especially concerned with the history of exposure to tuberculosis. As far as possible the date of establishment of each household has been ascertained, and the number of years that each member of the family spent therein has been recorded. Then, with the record of onset of tuberculosis in any member, the years of exposure of every other member can be calculated. Life tables are being worked out with expectancies calculated for every degree of exposure. These results will be published later.

GIBSON COUNTY STUDY

The locations of the special study of tuberculosis in Tennessee were originally planned to be one county in each of the three grand divisions of the state, so chosen as to obtain representative agricultural and industrial, urban and rural groups characteristic of each area. During the first year Gibson County in western Tennessee was studied, an area predominantly agricultural, with about one fourth of the inhabitants of the Negro race.

A study of the mortality reports from Gibson County brought out some interesting and useful information. First, the death rate from tuberculosis in age groups over 40 in the white population is markedly elevated over that of the United States registration area as a whole, an excess not so marked in other age groups. In females this elevation begins earlier and attains a higher level than in males. Also, the maximum death rate from tuberculosis occurs in an older age group than in the United States registration area. These differences can be shown also to hold for the state as a whole, and Gibson County therefore shows in this a miniature of what takes place in the state as a whole. In striking contrast, when the colored population is considered, no such age and sex variation from the general experience is noted. The explanation of this phenomenon is not yet clear and is being given further study.

Tuberculin testing of Gibson County school children showed positive reactors to constitute 56 per cent in the age groups from 5 to 19 years. This, for a rural area, is strikingly dissimilar to the finding of 10 per cent in one similar New York rural county,[1] and indicates a markedly greater prevalence of infective cases in Tennessee.

Careful family and individual epidemiologic histories were assembled on home visits to 265 tuberculous families and all available family data recorded, especially with regard to exposure to tuberculosis. The study also included about 100 families as controls, with the idea of discovering any differential factors that might be responsible for the tuberculous state in one and not another family. Each person had clinical and roentgenologic study and a tuberculin test. Altogether, 125 deaths from tuberculosis were the leads that resulted in the complete study of as many families. These represent about one fourth of the deaths from tuberculosis occurring in the county in the ten years, 1919 to 1929, and are considered a fair sample. In addition, 140 patients with their families located through morbidity reports were included. For obvious reasons it was necessary to limit activities of the study unit at some point, and the study of tuberculous families was therefore confined to the group thus delimited.

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[1] Korns, J. H.: Tuberculous Infection Among School Children in a Rural Area in New York State, Am. Rev. Tuberc. **24:** 534 (Nov.) 1931.

A brief summary of the findings from the study of this group of families and individuals is given here. Again, well over one half (59 per cent) of all deaths of white persons from tuberculosis were in those over 40 years of age, while in the colored race only 22 per cent were in those over 40. This is not a surprising finding in the colored race, but it is surprising that nearly one half of the colored patients found (44 per cent) were over 40 years of age. A similar percentage for white persons was found to be 32.

If the individual leads or introductory cases or deaths that led to the study of each family (these are called basal cases) are considered, there was a history of tuberculosis in one or both parents in 39 per cent of the 111 basal cases in white persons and in 35 per cent of the 106 basal cases in colored persons. These findings afford good evidence regarding the importance of the parent as a primary focus of infection. The association of parent and child is not occasional but continuous. With these facts in mind, should we not treat the prevention of tuberculosis from a point of view more closely approximating that which affords a guide in dealing with such diseases as diphtheria?

Of all patients found in all families studied, about half gave a definite contact history of exposure to tuberculosis. Most of the exposures to nonparental cases of tuberculosis began after 30 years of age. Fourteen per cent of white and 28 per cent of colored patients gave such a history.

The effect of household association with cases of tuberculosis was also studied. One thousand and ninety-five such associates were examined in Gibson County. In the age group under 5 years about one half of those examined in the clinics exhibited some evidence of tuberculous infection. Naturally this percentage increased with age. Eighty-five per cent of adults associated were found infected. In every age group the proportion of infections was higher in the colored than in the white race. This is as would be expected from what is known of the difference between white and colored persons as regards living conditions and the pathology of tuberculosis. The results of tuberculin testing among school children were studied as an index of infection in the county at large. The Mantoux intracutaneous test was used in 2,900 children, about one fourth of these being colored. When comparison was made of these tests with the results of study of children in the family groups, it was seen that children in household contact with tuberculosis had a materially higher per cent of infection than children in the same age group from the general population.

In studying the severity of infection in household contacts, the findings obtained by physical examination plus roentgenologic examination in 335 white and 491 colored persons were classified. From this it appears that from 20 to 25 per cent of household contacts in association with cases of active tuberculosis show tuberculous lesions classed as more or less active or dangerous. At the time the study was made, 2 per cent of the white contacts and 8 per cent of the colored contacts had died of tuberculosis. There is plenty of room here for speculation on the greatly increased death rate in the colored race.

A study was made of deaths in household contacts since the onset of disease in the basal case. Usually about four years had elapsed from the beginning of contact with the basal case to the date of record. The annual death rate per thousand contacts in 1,217 contacts was 1.7 for the white and 4.2 for the colored race. These rates are approximately twice the expected rates when the average experience in the county as a whole is considered.

These studies of the Gibson County data clearly reveal among other things the paramount importance of household contact in the spread of tuberculosis. As a result of the predominance of the fibroid type in adults, the conclusion seems warranted that the chronic fibroid cases are of outstanding importance in the spread of tuberculous infection in this state. They cannot be regarded as noninfective or unimportant.

The method of attack in control is clearly indicated. It is necessary to break the chain of long-continued contact between fibroid and other types of tuberculosis with the household associates, especially children. The first step in this solution consists in identifying the responsible infective cases. This the field clinics are doing as far as resources now make possible. The next step will be to institute a system or rather a combination of systems which, recognizing the infectious nature of tuberculosis, will make possible the isolation of these infective cases. For many years to come, the great majority of patients in Tennessee will perforce have to be treated in their own homes. Regional hospitals for certain types of cases will have to be provided as soon as this can be financed. Above all, a well balanced program that treats the problem from the point of view of mass control of an infectious disease seems to be the logical approach.

STUDIES IN OTHER COUNTIES

Following the period of activity in Gibson County, the study was carried on in Kingsport, in eastern Tennessee, an industrial city of 15,000 drawing its population from the Appalachian mountains, which surround it. Here was a situation differing in many details from agricultural Gibson County. Only about 600 Negroes were resident in this community, and practically every Negro had a complete examination, including roentgenologic study. Here, then, is a study of a complete Negro community, and not a mere sample of it. The Negroes live under relatively better economic conditions than prevail in western Tennessee, and the preliminary examinations of data collected has tended to show that tuberculosis in such Negroes tends to approach the same level of incidence and activity that is found in the white group. Nearly 10 per cent of these Negroes were found to have definite or suspected adult types of tuberculosis (4 per cent definite, 6 per cent suspected). The positive results with tuberculin testing were: 13 per cent in the age group under 5 years, 61 per cent in the 5 to 9 year group, 75 per cent in the 10 to 14 year group and 90 per cent in those over 15 years. Tuberculous infection precedes tuberculous disease. The magnitude of the potential tuberculosis problem in this Negro group is evident.

The data on both colored and white families from the Kingsport studies are now being analyzed and the results are to be published later. Life tables for the various age groups, comparing the chances of survival following exposure to tuberculosis at various ages, are being prepared and afford considerable information. For example, in Kingsport age-specific mortality among persons who were *born in the households*, who have lived in the households during the age period under 1 year and who give a history of exposure to cases of tuberculosis has been found to be 7.5 per thousand persons. No deaths are reported among exposed persons who have lived in the households during the age period from 1 to 4 years. Thirty two and eight-tenths per thousand have died of tuberculosis among the group who have lived in the households during the age period from 10 to 19 years, and in the 20 to 39 year group there is noted a mortality of 257 per thousand persons. The total tuberculosis mortality at all ages, in the exposed group, is noted to be 16.5 per thousand, a rate more than double that in the non-exposed group. These rates presented in this manner are not very comprehensible. A detailed tabular account will be available at a later date.

The study of tuberculosis has now been established in Williamson County in middle Tennessee, where a third year of study is being carried forward. Here it is hoped that it will be possible to spend a number of years and observe more continuously and over a much longer period of time the manifestations of tuberculosis in an area and population restricted to one county. This is referred to as a longitudinal section study, with observations to continue indefinitely. Certain rechecks in other areas will be made from time to time, and it is hoped that facts brought out will be of such a nature that practical use can be made of them in the control program. The study group and the control group have a close and intimate association, being interchangeable in many respects. Any lead to better control that is indicated as of promise will be promptly put into effect in the control group. There is thus a definite union of study and control in the problem, and findings in the study are to be applied to the control program in such a way that a maximum effect of money expended may be obtained.

SUMMARY

The Tennessee program of control of tuberculosis as an activity of the state government had its beginning in 1927. This program has been essentially one of field activities, and during the first four years since its inauguration 1,794 clinics have been held, 28,131 examinations made and 5,243 positive cases of tuberculosis found and brought under the active direction of their personal physicians.

Special field studies of tuberculosis have been in progress during the past two and one-half years. Some of the findings in these studies have been presented briefly to indicate (1) the importance of household contact in the spread of tuberculosis and (2) the importance of chronic fibroid cases in the spread of tuberculous infection in this state.

The logical means of approach in the control of tuberculosis in Tennessee, in the light of information now at hand, would seem to center around the breaking of the chain of long-continued contact between patients with fibroid and other types of tuberculosis with their household associates. Eventually this would mean the establishment of hospitals or retreats for the care of the patient who is spreading tuberculous infection among members of the family and friends.

A continuing or longitudinal section study of tuberculosis is now in progress. It is hoped that this study can be carried on over a number of years. The relationship of the control and study groups is close, and findings of the study group can promptly be put into practical use in the control group.

ABSTRACT OF DISCUSSION

Dr. Horton R. Casparis, Nashville, Tenn.: The authors mentioned hospitalization in Tennessee. The control of tuberculosis has got to be placed on the medical profession. In Tennessee the state department is finding tuberculosis with all the means at its disposal. When tuberculosis is found, the state department does not tell the people what they have, or are supposed to do, but says "Go to your physician. He will tell you what we have found and what to do." That is the most important means of handling it and if one expects to shift the responsibility over a wide scale, and if one expects to accomplish anything, it has to be done that way. In starting a program anywhere for the same reason it is most important first to get hold of the physicians and familiarize them with what one expects to do. If one starts to discover tuberculosis and the patients begin to go to the physicians and ask them about it, and the physicians have not been told about the modern means or have not been familiarized with the means one is going to use to control it, they are likely to resist; but if one goes in and sees them first and tells them what one expects to do, not treat tuberculosis but find it out and turn it over for treatment and control, one will have little trouble in getting cooperation from the medical profession.

Dr. J. N. Baker, Montgomery, Ala.: The big problem of tuberculosis control is of absorbing interest to every administrative health officer. It is important, I think, to educate communities and to stress their responsibility, both financial and otherwise, in all measures of control and treatment. I desire to emphasize the authors' point as to the great importance, not only in the early diagnosis of this disease, but also in the value of proper control measures for the open case. After all, our greatest hope, so far as ultimate mortality is concerned, lies in the rescuing of the contacts, and thereby heading off actual breakdown in later life. In Alabama, where organized medicine within the state constitutes the state board of health, we find our traveling chest clinics a most valuable aid in tying in the profession to preventive health work, as well as stimulating a livelier interest in more accurate and earlier diagnoses in all disease conditions. Many expressions of appreciation from the profession throughout the state come to us of the value of this service both to the physician and to his patients. These clinics do not undertake any form of treatment but strive to establish a closer contact between the patient and the family physician. It is felt also that through these activities, aimed at earlier diagnosis, a stimulus should be given to the surgical aspects of the modern therapy of this disease, which, in selected cases, offer rich promise of cure, more particularly in the earlier case. In the absence of widespread sanatorium facilities, which few of the Southern states have, the wide-awake surgeon with even a small hospital at his disposal should find in this field opportunity for larger and more profitable service. Because of a dearth of hospital accommodations, we are endeavoring to stimulate interest in the local community and the local profession and to have them play a larger rôle in the solution of this problem. At present, with the aid of the Rockefeller Foundation, we have just begun an intensive study of our rural tuberculosis problem in a typical county of our state. This study will be carried on over a period of several years.

Dr. Henry F. Vaughan, Detroit: I should like to reemphasize the statement made by Dr. Baker concerning the need of integrating into the program the general medical profession. It is becoming more or less a hobby with us in Detroit to eliminate so far as possible the clinic activities of the department of health and construct the facilities of the medical profession in participating in our program of preventive medicine. We have done that in the field of diphtheria prevention satisfactorily until we have brought about, without any free clinics by the health department, immunization against diphtheria of 75 per cent of our population between the ages of 1 and 10 years. In tuberculosis we are attempting to do the same thing. We have 400 cooperating physicians, who are at present working as part of the health machinery of our community in finding early cases of tuberculosis, who have agreed to make these examinations at a definite price, at a definite time, in their own offices. It is working out satisfactorily. If one can integrate into the program a prepared medical profession, it is extremely helpful. We prepared the medical profession, the cooperating physicians, by an intensive course of postgraduate instruction carried over a period of several months, so that the physicians are thoroughly acquainted with the modern procedure in finding early cases of tuberculosis, and the tuberculin test is being made in the physician's office, not in the school. The physician is making the physical examination, and either he himself, if he has the equipment, makes the roentgenologic study of those who give the positive tuberculin test, or he refers these cases to a group of cooperating roentgenologists for the more detailed chest study, and then the cases are referred back to the physician. This program results in an increasing practice of preventive medicine on the part of the general practitioner in contradistinction to curative medicine.

Dr. H. C. Stewart, Franklin, Tenn.: There is little more I have to add to what has been said except to call attention to the fact that each of the speakers stressed the importance of the cooperation of the practicing physicians. That, of course, has been primary in the Tennessee program. When the program was first started, each county society was visited and the whole program was gone over with the physicians and discussed fully, after which invitations were extended to the state department of health to come in and conduct the work in that county. I was interested in what Dr. Baker had to say about the study project. Our own study is something along the same line, conducted in one of the Tennessee counties near Nashville, where there are available all sorts of facilities for consultation, and we feel that in a few years we shall be able to give out something of real importance.

THORACOPLASTY IN PULMONARY TUBERCULOSIS

GENERAL AND ECONOMIC CONSIDERATIONS

KENNON DUNHAM, M.D.
AND
ESLIE ASBURY, M.D.
CINCINNATI

Surgical aid has made a place for itself in the treatment of pulmonary tuberculosis. Phrenico-exeresis or evulsion of the phrenic nerve to paralyze one half of the diaphragm, thoracoplasty or the removal of a portion of the ribs and the cauterization of pleural adhesions to facilitate pneumothorax are established procedures with but slight operative mortality in well selected patients in experienced hands. Surgeons and internists are agreed to this extent; but there is still disagreement on the selection of patient and procedure, the technic of the operation and the causes of mortality and poor results. It is therefore important for experience to be recorded and end-results critically studied.

The publications on the subject in this country have been largely confined to special journals, and there are still ten contributions in foreign journals to one in English organs. This has probably been fortunate in that it has tended to prevent overenthusiasm on the part of the general profession during the formative period; but now that certain features of the work are on a practical basis, it is important that the general profession interest itself sufficiently to give patients the benefit of surgical adjuncts in the treatment of pulmonary tuberculosis.

Years of teaching against surgery in tuberculosis have prejudiced both the profession and the laity against thoracoplasty. The known excellence of the results in operations on tuberculous joints should give added impetus to collapse therapy for pulmonary tuberculosis. Extrapleural thoracoplasty and extra-articular arthrodesis are both mechanical aids to healing: thoracoplasty by closure of cavities and immobilization, and arthrodesis by immobilization and ankylosis. We know that tuberculous joints to be useful must heal without motion, and likewise, where indicated, permanent collapse of a lung is desirable to close cavities and prevent recurrence.

Most of the literature on surgery in pulmonary tuberculosis has been written by individual surgeons or internists. We feel that it is difficult to work out this problem independently. Too frequently the surgeon, often not thoroughly acquainted with the pathology and care of tuberculosis, and ignorant of the "feel" of the case which the internist develops after treating it for a long period, will advise unwise procedures; on the other hand, the internist without surgical consultation may beguile himself into radically conservative measures. Brauer[1] solved the problem by learning to do his own operations after establishing himself as a chest internist, but the cooperative effort of Key and Jacobæus of Stockholm is the ideal arrangement.

This paper represents a similar combined medical and surgical experience, based on the private work of both of us at the Good Samaritan Hospital, and on the work of one of us (Dr. Dunham) as medical director of the Hamilton County Tuberculosis Sanatorium. It is not a statistical study, but rather a general discussion. We feel that a combined point of view arrived at after cooperative effort is a more timely contribution.

ECONOMIC PHASES

In view of the proved value of surgery in the treatment of pulmonary tuberculosis, it is to be regretted that no facilities for it, in either personnel or equipment, exist in the great majority of public sanatoriums. Also, most of the large general private hospitals either have no means of adequately caring for cases of open tuberculosis or are afraid to admit them.

Brown[2] reported that, after nine years, eight of thirty-six patients on whom thoracoplasty had been performed were dead, while the remainder were either working or clinically well. These patients averaged less than a year of treatment after operation. Nine patients were followed who had been advised, but who had refused, operation. Six were dead, two were still under care, and one had recovered after five years of institutional treatment. Those who died averaged five years of care in a public sanatorium after the operation was refused. These figures are probably applicable to all institutions. Most of the patients on whom thoracoplasty should be done are notoriously persons who, without operation, live in a bedridden condition for years, a menace to all who come into contact with them. It is estimated that this group, though comprising a small percentage of the total number of patients, represents from 25 to 50 per cent of the patient days. It is evident that a great saving to the commonwealth would result if the sanatoriums were relieved of even a small percentage of the chronic cases. In a few states provision is made for sending these patients to the state hospital for surgical care. The patients at the Hamilton County Tuberculosis Sanatorium are being constantly examined by the internists and by the attending chest surgeon. If

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Brauer, L., quoted by Alexander, J. S.: Surgery of Pulmonary Tuberculosis, Philadelphia, Lea & Febiger, 1925, pp. 27-30.

[2] Brown, P. K.: Ann. Int. Med. 4: 361-371, 1928.

surgery is indicated they are removed to the Cincinnati General Hospital and returned after operation. It is evident that this type of cooperation is possible only in large cities, although many large cities themselves lack these facilities because the sanatoriums are usually run by the county, district or state, and the city hospitals take care of patients living only within the city limits.

Society is pledged to do all in its power to cure disease, and the citizens want their taxes reduced. Both of these projects are aided by the plan which has been outlined. It is deplorable that all cases of tuberculosis, whether charitable or under private care, do not have the benefit of surgical aid when indicated. Working plans to handle this problem are already in operation in European countries. The state board of health, interested lay organizations, the county authorities and the directors of sanatoriums should cooperate to provide surgical consultation and care for all indigent patients. We suggest that each county or sanatorium make arrangements with the nearest general hospital to have one or more members of its staff, trained in chest surgery, see these cases at the discretion of the director. Phrenicectomy could be performed at the sanatorium, but for larger procedures, the patient should be moved to the hospital temporarily on a prearranged per diem basis, which would not be materially greater than the cost for the same period at the sanatorium. The handling of the private patient is the concern of the general profession.

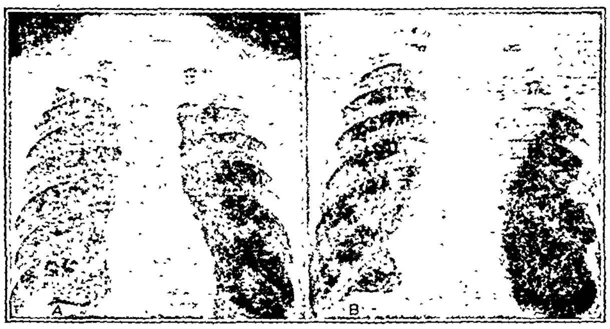

Fig. 1.—*A*, a large cavity in the left lung; moderate emphysema in the right lung. *B*, unsuccessful pneumothorax due to apical adhesions too extensive and too high to cut. Phrenicectomy was not indicated. Death occurred within forty-eight hours after thoracoplasty, due to poor cardiorespiratory function.

SELECTION OF PATIENTS FOR OPERATION

Why and when are surgical measures valuable in pulmonary tuberculosis? Natural cures of this disease have been effected for centuries, and under proper conditions the tendency of tuberculous lesions is to heal. Rest in bed to reduce the depth and number of respirations and build up the general resistance is still our greatest aid in any case. Rest in bed constitutes the accepted treatment in most cases, either because the lesions are minimal or because both lungs are involved, contraindicating collapse therapy. If only one lung is actively involved, some form of collapse therapy should be considered, but it cannot be used in all cases.

The simplest form of collapse therapy is artificial pneumothorax. Pleural adhesions may prevent the introduction of air; or this method may have to be abandoned when adhesions cannot be further stretched (fig. 1) or when new adhesions form. The adhesions attached to the chest wall hold open cavities which are reservoirs for the incubation of tubercle bacilli which jeopardize not only the uninvolved lung of the patient but the safety of every one in contact with him. In certain cases, adhesions may be divided by the Jacobæus or open method so that pneumothorax can be continued. If the adhesions are widespread and cannot be cut, or if a pure tuberculous empyema occurs, thoracoplasty must be considered.

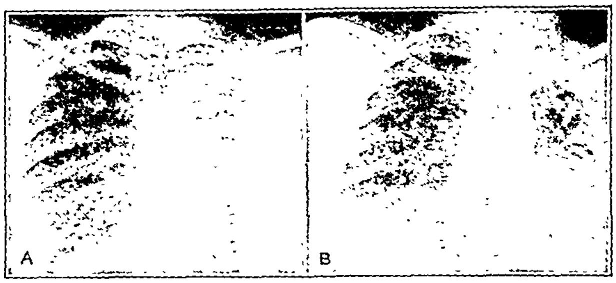

Fig. 2.—*A*, advanced tuberculosis of the left lung. A thickened pleura, cavitation and persistently positive sputum were noted. *B*, appearance following phrenicectomy and thoracoplasty. There was continuously negative sputum and the patient recovered.

Why do we do thoracoplasty? Primarily to do away with positive sputum. The field for thoracoplasty is limited to cases of involvement of one lung which show evidence of cicatrization, but in which the cavities are not closing and persistently positive sputum is found (figs. 2 and 3). Toxicity, as evidenced by fever and a rapid pulse rate, should be absent. The general condition of the patient must be favorable, although arrested lesions in the opposite lung, as well as secondary lesions, are compatible with collapse therapy.

If the case falls more or less into the foregoing pattern, the cardiorespiratory capacity should be studied. Long rest in bed has made the heart muscle weak, and toxemia has damaged it. Emphysema, due to overuse of the good lung, may be pronounced. The only way to determine whether these patients can stand a major operation is to observe the effort syndrome. Although contraindicated in the treatment in the average case, it is felt that before operation, one should get these patients out of bed daily, gradually increasing the time and amount of exercise, keeping a record of the rise in pulse and respiratory rate and observing the amount of dyspnea. The length of time required for the return to normal should be noted. Cyanosis is a positive contraindication to surgery. It must be remembered that many of these patients are unable to walk. Thoracoplasty will affect them as would a 50 yard dash. Shock, local anesthesia poisoning, aspiration and other conditions are at times the cause of death during the

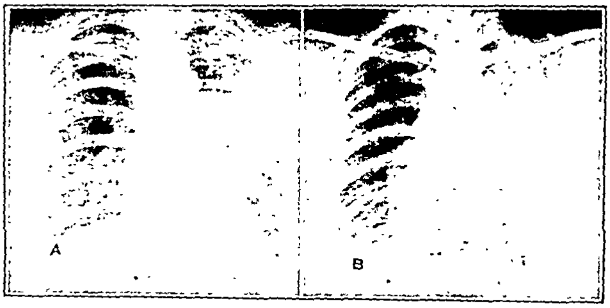

Fig. 3.—*A*, far advanced tuberculosis of the left lung. A persistently positive sputum was noted for three years. Phrenicectomy was insufficient, and pneumothorax impossible. There was a good cardiorespiratory capacity. *B*, appearance after thoracoplasty; sputum has since been negative continuously. Complete recovery occurred.

first forty-eight hours after thoracoplasty, but our experience and a survey of the literature lead us to believe that 75 per cent of these deaths are cardiorespiratory (fig. 1). The number of patients on whom we have made careful observations of the effort syndrome is still too small for tabulation, but we believe that this information is proving valuable, both as a method of selection in otherwise suitable cases and as a means of preparing the doubtful cases for operation. Other methods of investigating the heart should not be neglected. It is essential that one estimate the amount of compensatory emphysema by physical examination and by x-ray films (fig. 4). The experimental work of Churchill demonstrates the importance of this determination.

Phrenico-exeresis is done either in conjunction with thoracoplasty or as an independent procedure. If the patient has a onesided lesion and pleural adhesions which cannot be cut, and if he is too toxic for more radical procedures, phrenico-exeresis is done. Owing to the 15 to 25 per cent compression of the lung from raising the diaphragm and the lessened excursion of the lung, further surgery may not be needed if the sputum becomes negative (fig. 5). As a rule, some improvement occurs. If there is doubt as to the condition of the good lung, phrenico-exeresis serves as a test and a preparation for thoracoplasty, and can also be used after thoracoplasty when further collapse is needed to obtain negative sputum. The amount of upward displacement of the diaphragm following phrenicectomy will depend on its preoperative mobility. At times the diaphragm seems to be so completely fixed that cutting the phrenic nerve appears useless. In our experience, it is difficult to say how much improvement will occur in patients with an apparently fixed diaphragm, because there is possible movement of a part not detected by clinical or fluoroscopic examination. At any rate, the lack of tonicity of the muscle and the doing away with the inspiratory drag are of value in all cases, and cutting the phrenic nerve is worth trying even though the diaphragm is fixed.

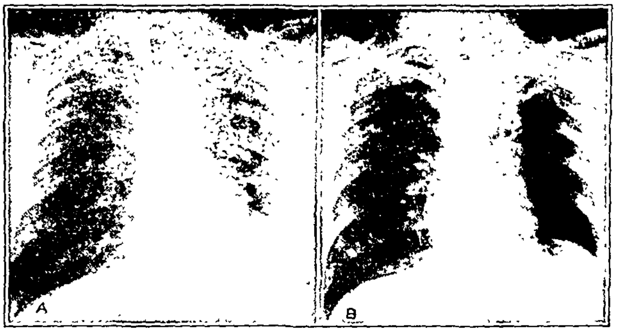

Fig. 4.—*A*, advanced tuberculosis of the left lung with cavitation. The high elevation of the diaphragm is the result of phrenicectomy. Thoracoplasty is indicated in the x-ray film, but the cardiorespiratory condition was unsatisfactory. *B*, tuberculosis of the left lung. A cavity and upward retraction in the upper lobe are noted. Moderate elevation of the diaphragm followed phrenicectomy, but the sputum was persistently positive. The film shows a healed lesion and excessive emphysema on the right, but the cardiorespiratory condition was favorable for thoracoplasty.

PREOPERATIVE PREPARATION

The greatest advance in the performance of successful operations since the contribution of Lord Lister is the better preparation of the patient with the narrow margin of safety to meet the ordeal of major surgery. Hedblom,[3] Alexander,[4] Archibald[5] and others have stressed preoperative preparation of the patient on whom thoracoplasty is to be done, and have made valuable contributions to the subject. The mortality has been lowered by these measures and by a simpler method of operative attack. Further study to determine the causes of certain deaths is still needed. In a broad sense, the selection of the patient is the most important part of the preoperative preparation.

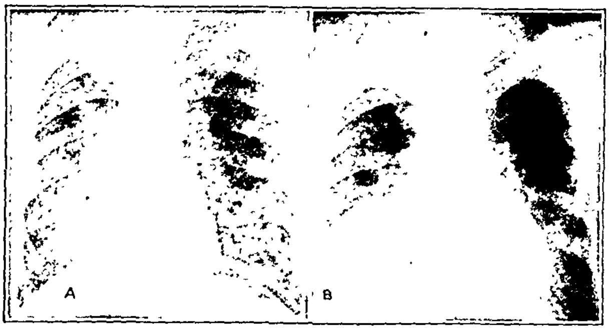

Fig. 5.—*A*, advanced tuberculosis of the entire right upper lobe, with persistent positive sputum. *B*, an unusually high elevation of the diaphragm as a result of phrenicectomy. Recovery occurred without thoracoplasty; the sputum was continuously negative.

Phrenicectomy, graded exercise, and cardiorespiratory studies have already been discussed. Faulkner's[6] work on internal drainage has shown the advisability of attempting to empty posturally large cavities just before the patient is brought to the operating room. Although we have discarded postoperative transfusion of blood, occasional preoperative use of blood is needed if the hemoglobin is low and thoracoplasty is to be done with the hope of controlling hemorrhage. Usually time is not so important that we cannot slowly build up the patient. If such a measure as preoperative transfusion is necessary, the case is probably not a suitable one for surgery.

Our procedure is to give 3 grains (0.19 Gm.) of amytal by mouth two hours, and morphine one-half hour, before operation. We agree with Lundy[7] that the amytal not only acts as a sedative and helps "balance" the anesthesia, but apparently neutralizes some of the toxic effects of the procaine hydrochloride.

TECHNIC AND METHODS

This paper has nothing to add to the methods of performing phrenicectomy, cutting pleural adhesions or apicolysis, which have been ably described by Matson,[8] O'Brien,[9] Alexander and Hedblom. Although the Wilms-Sauerbruch[10] technic of thoracoplasty has been adopted by the majority, there is considerable variation in approach. We believe that many of these differences in method are due to a confusion between what is best for the patient and what is easiest for the surgeon. For example, it is far easier to remove the upper ribs at the first stage because the scapula is freely movable and there is no scar tissue to prevent exposure and infiltration anesthesia. Owing to expediency, one is even tempted to finish the operation in one stage.

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[3] Hedblom, C. A.: Phrenico-Exeresis and Extrapleural Thoracoplasty in Treatment of Pulmonary Tuberculosis, Southwestern Med. **13**: *53-64 (Feb.) 1929.*

[4] Alexander, J. S.: Surgery of Pulmonary Tuberculosis, Philadelphia, Lea & Febiger, 1925.

[5] Archibald, E. W.: Dangers Involved in the Operation of Thoracoplasty for Pulmonary Tuberculosis, Surg., Gynec. & Obst. **50**: 146-153 (Jan.) 1930.

[6] Faulkner, W. B., Jr.: Internal Drainage, Am. J. Surg. **12**: 27-31 (April) 1931.

[7] Lundy, J. S.: Personal communication to the authors.

[8] Matson, R. W.: Phrenicotomy, Nat. Tuberc. A. Tr. **24**: 170, 1928.

[9] O'Brien, E. J.: Phrenic Nerve Operations in Pulmonary Tuberculosis, J. A. M. A. **95**: 650-652 (Aug. 30) 1930.

[10] Sauerbruch, F., quoted by Alexander (footnote 4, chap. 9).

This method is technically the easiest, but often disastrous. Harrington[11] retains many of the advantages of the one-stage procedure by making the complete incision for all stages at the first operation, limiting his operating time to thirty minutes and discontinuing any time the blood pressure drops below 100. Alexander, Hedblom and others remove the upper ribs first, feeling that by subsequent phrenico-exeresis they may obtain sufficient collapse for closure of apical cavities by the partial operation.

Our procedure (Dr. Asbury) is to remove portions of at least ten ribs subperiosteally as close to the transverse processes as possible in two stages, including the fifth to the eleventh at the first stage. Like Archibald, we have abandoned removal of the upper ribs at the first stage, because of the greater collapse and the added cardiorespiratory burden. We have never observed autotuberculinization due to collapse of large cavities, after either pneumothorax or thoracoplasty, nor do we fear a "fluttering mediastinum" because if there is enough pleurisy to prevent the use of pneumothorax, there are sufficient adhesions to cause at least a partial fixation of the mediastinum.

The second stage must not be unduly delayed, since new bone forms from the periosteum which was stripped from the removed sections of ribs and left behind to insure a rigid chest wall; but infection, such as acne or stitch abscesses, and wound drainage must be cleaned up before it is attempted.

Myocardial weakness has already been discussed. This factor, together with emphysema, outweighs all others in the operative risk, and must be kept in mind when using procaine-epinephrine anesthesia, whose chief danger is the great burden thrown on the heart. Before arriving at our present technic of infiltration, using a maximum of 100 cc. of 0.5 per cent procaine hydrochloride with 10 drops of epinephrine, we had one fatality and two severe reactions which were ascribed to the use of unnecessarily large amounts of solution, in one case as high as 200 cc. No trouble has been encountered since adopting the rule that the operation be either discontinued after 100 cc. is used, or finished with nitrous oxide anesthesia. In cases of severe myocardial damage, Meeker[12] contends that there is less danger from gas anesthesia than from procaine hydrochloride, although we believe that in the average case the advantages of local anesthesia should be retained because of the lessened danger of aspiration, asphyxia and pneumonia. There are also less bleeding and less need to hurry, and therefore less operative trauma, with local anesthesia. We agree with Carter[13] that speed is not the *summum bonum* in thoracoplasty. The beginners in this work often mangle a good deal of tissue to keep their operating time within ordinary limits. While all speed and skill possible should be utilized, gentle handling of tissue should never be forgotten. There are certain methods of exposure, mobilization of muscles and hemostasis which will do more to expedite the operation than any amount of rough, hurried surgery. In a general way, the Halsted type of surgery finds its best application in thoracoplasty.

At best, these patients suffer a certain amount of shock. The British Shock Commission, Turck[14] and others believe surgical shock to be due to the absorption of histamine and albuminoids from crushed tissue. In thoracoplasty there is a large operative area and much tissue is injured in obtaining exposure and removing periosteum from the ribs, even in the best performed operation. The extent of shock depends on the amount of blood lost, the cardiorespiratory condition before operation and the amount of trauma to tissue.

POSTOPERATIVE CARE

W. J. Mayo's[15] remark that the most important part of the after-care should be given while the patient is still on the table applies especially to thoracoplasty. Properly selected and prepared patients and well performed operations require a minimum of heroic postoperative effort; but since the disease must run a long course before thoracoplasty is justified, and since these cases present problems peculiar to themselves, certain measures have been found to have value in postoperative care. It must always be borne in mind that all these people are handicapped even with the best of preparation and selection. The majority of patients after thoracoplasty exhibit a pulse rate up to 120, a temperature up to 102 F. and a certain amount of cyanosis and dyspnea for from two to seven days after operation. In our early experience, we could not differentiate between average and grave postoperative manifestations, and were frightened unnecessarily into measures disastrous to two patients. Precautions in the ordinary case consist in instituting warm saline proctoclysis while the patient is on the operating table to compensate for loss of heat and fluids due to perspiration, always profuse during chest operations. A dressing pad is applied firmly and the arm is held closely to the side operated on to give stability to the chest wall and prevent painful movement. The patient is required to lie on the affected side as much as possible to cause further fixation and allow freer respiration in the good lung. A minimum of morphine is given as the cough reflex must not be lost. It is important to have the attendants steady the chest and have the patient cough at regular intervals to promote drainage and prevent bronchial plugging. Faulkner has shown that deaths are caused by the spilling over of the contents of cavities into the good lung, or sound parts of the affected lung, causing asphyxia or atelectasis. Atropine, which makes the secretions more viscous and increases the danger of a plugged bronchus, should be avoided. Frequent changes of position, except to the sound side, should be encouraged. If a large bronchus becomes blocked, internal drainage through the bronchoscope may be necessary. We look to the internist, long familiar with the patient, to detect these and other dangers, such as edema of the lung which usually responds to epinephrine.

Two years ago the use of acacia to combat the severe postoperative shock was begun. Even if this substitute were not available, transfusion of blood in these cases would be feared because of one fatality and several untoward reactions. Based only on this clinical evidence, it is believed that an unexplained change in the blood of these patients after operation makes transfusion more dangerous than in other fields of surgery. On the other hand, acacia is a safe, reliable, intravenous solution which actually accomplishes more than transfusion (Good [16]). It can be used on a moment's notice, through a very small needle which eliminates cutting down on the vein. An important advantage is its trifling cost, a vital consideration in this group of patients, many of whom are indigent. It is our practice to use this solution in the majority of cases about one hour after operation, or sooner if the blood pressure drops below 100.

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[11] Harrington, S. W.: Pulmonary Tuberculosis, S. Clin. North America **9**: 138-142, 1929.

[12] Meeker, W. R.: Personal communication to the authors.

[13] Carter, B. N.: Thoracoplasty as a Method of Treatment in Pulmonary Tuberculosis, Arch. Surg. **22**: 289-306 (Feb.) 1931.

[14] Turck, F. B.: Mil. Surgeon **64**: 687-709 (May) 1929.

[15] Mayo, W. J.: Personal communication to the authors.

A special "infusion radiator" (fig. 6), designed by a sister at the Good Samaritan Hospital, allows the solution to be given at a constant temperature of 99 F. at the rate of about 25 cc. per minute. From 500 to 800 cc. is given, dependent on the response of the blood pressure. No reaction or ill effects have been encountered from the use of acacia at the Good Samaritan Hospital, and many others, including Adson and McIndoe,[17] Smith and Lowsley,[18] report favorable results. The World War experience of many men with acacia is probably the reason that it has not gained greater recognition. The delay in treating the badly wounded (Cabot [19]) together with the use of impure solutions probably accounted for the poor results.

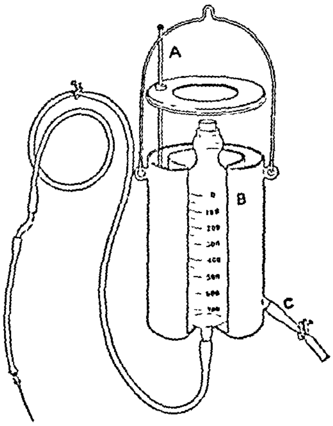

Fig. 6.—Infusion radiator, a simple apparatus to keep intravenous solutions at a constant temperature, allowing slow administration: *A*, thermometer; *B*, water jacket surrounding Kelly bottle, and *C*, outlet.

CRITERIA OF END-RESULTS

In our series of patients at the Good Samaritan Hospital who had thoracoplasty, 35 per cent had continuously negative sputum beginning two weeks after the operation. All of the remainder had consistently negative sputum after a period varying between two and nine months, with the exception of two patients who had persistently positive sputum. In a series of fifty cases from the Hamilton County Tuberculosis Sanatorium, 40 per cent showed negative sputum at once after operation, 40 per cent negative sputum after a period averaging seven months and seven persistently positive sputum. All patients who had negative sputum after operation recovered, while those who continued to have positive sputum either remained sick or died.

If the general condition of the patient is satisfactory and the sputum is still positive after six months, further collapse should be attempted, first by phrenicectomy and then, if necessary, by removal of anterolateral sections of the ribs. In certain cases secondary removal of posterior sections, though difficult on account of excess new bone formation and general cicatrization, may be necessary to obtain a further drop in the chest wall. In reattacking posteriorly, one must remember to divide the old periosteal bed if further drop of the chest wall is to be obtained. A stereoscopic x-ray study will determine which ribs should again be cut. In order to obtain collapse of the lung, the chest wall must drop, and this is prevented if the transverse processes are unusually long, or if the ribs are not sheared off at the vertebrae.

If positive sputum persists, the operation is regarded as a failure. Several patients were observed who had complete collapse of cavities, but the sputum remained positive. Although the x-ray films looked favorable, these patients gradually grew worse. On the other hand, there were several instances of incomplete collapse of cavities as shown by x-ray studies and yet the sputum became negative and the patients recovered.

SUMMARY

1. Thoracoplasty and phrenicectomy are established adjuncts to the treatment in selected cases of pulmonary tuberculosis.

2. *Positive sputum is the chief indication for thoracoplasty in patients otherwise suitable. Continuation* of positive sputum after thoracoplasty indicates need of further collapse. The sputum may continue positive after complete collapse or become negative with incomplete collapse. In any case, the only criterion of a successful thoracoplasty is a living patient with continuously negative sputum.

3. A plan is suggested to give the benefit of surgical procedures to both private and indigent patients with pulmonary tuberculosis, and the economic value of thoracoplasty is stressed.

4. A plea is made for further study of the effort syndrome in prospective thoracoplasty patients and of the cause of the occasional operative death within the first forty-eight hours. Cardiac damage and emphysema of the good lung should be estimated before operation.

5. The Wilms-Sauerbruch technic of paravertebral thoracoplasty in two stages is recommended, removing portions of ten ribs, including the first, as close to the transverse processes as possible, taking the lower ribs at the first stage.

6. The use of acacia instead of the transfusion of blood is recommended to combat shock because of its safety, reliability and cheapness.

ABSTRACT OF DISCUSSION

Dr. Alton Ochsner, New Orleans: There are several points that I should like to stress which the authors have emphasized. One is the importance of determining the cardiorespiratory reserve. I have not used the same technic that they have used; viz., that of getting the patient out of bed and determining by his own exertion how much he can stand. I have attempted to determine the cardiorespiratory reserve by employing vital capacity studies and I feel that I can determine what type of patient will be able to stand such an operation. I also use as a test operation phrenic nerve operations. All my thoracoplasties are preceded by some type of phrenic nerve operation. In most of them I use evulsion. My experience has not been that of the authors' that blood transfusion is dangerous in these individuals. I use blood transfusions frequently, both preoperatively and postoperatively, and have been well satisfied with their use. I can see the advantages of the acacia solution, however, because acacia is always ready, it is not necessary to secure a suitable donor, and the ease with which it can be used certainly justifies it. I have felt that, in addition to the effect which collapse therapy would have on the tuberculous process in these individuals with the chronic fibroid phthisis with multiple cavities, thoracoplasty causes a collapse of these cavities in which a secondary, nontuberculous infection exists. The importance of this, I believe, has not been sufficiently appreciated. I have had patients in whom the sputum has become negative, indicating that the tuberculous process is more or less quiescent, and yet these individuals have not improved in that they have had considerable expectoration which is filled with large numbers of pyogenic micro-organisms. Following the collapse of these cavities by thoracoplasty, the stasis is relieved and the secondary infection is combated. It seems to me that the importance of secondary infection in these greatly dilated cavities has not been sufficiently emphasized. I think it is commonly believed that a patient who is once tuberculous is always tuberculous. That is probably true, but it is the type of individual in whom there is a special tendency toward fibrosis in whom the tuberculous process is especially apt to heal by itself, but in whom the symptoms due to the secondary infection and not to the tuberculous process are apt to continue. The point that the authors have made concerning the use of the positive sputum as a criterion is of special import. More attention should be paid to it.

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[16] Good, R. W., and Boyer, B. E.: Intravenous Use of Acacia Solution in Shock, J. Med. **12**: 630-636 (Feb.) 1932.

[17] Adson, A. W., and McIndoe, A. H.: S. Clin. North America **9**: 841-845 (Aug.) 1929.

[18] Lowsley, O. S.; Morrissey, J. H., and Ricci, J. V.: J. Urol. **6**: 381-398 (Nov.) 1921.

[19] Cabot, Hugh: Tr. Staff Meet., Mayo Clin. **7**: 80 (Feb. 10), 1932.

DR. E. J. O'BRIEN, Detroit: I believe that in most cases of pulmonary tuberculosis (especially with cavitation) the tendency is not to heal if the treatment consists only of rest in bed, and that at least 75 per cent of these patients should be subjected to some form of collapse therapy as early as possible in the course of the disease in order to facilitate closure, prevent cavity formation, and allow sufficient rest for their healing. I believe that the order of their simplicity is (1) phrenicectomy, (2) pneumothorax, and (3) thoracoplasty. With few exceptions it is only from those patients in whom some contraindication exists that collapse therapy in some form should be withheld. Neither bilateral nor minimal lesions alone constitute contraindications. I have a large series of cases under bilateral collapse therapy with excellent results, and it is my belief that the time to institute collapse is in minimal lesions if one is so fortunate as to see patients at this stage of their disease. As a matter of fact, bilateral lesions stand as a challenge to those who hold the view that collapse therapy should not be instituted early in the course of the disease. While, of course, it is always best that a prospective thoracoplasty patient should have unilateral cicatrized tuberculosis, many patients who could otherwise be saved would be lost if this rule was strictly adhered to. I do not believe that any patient with generalized tuberculosis should be subjected to surgery nor should any patient that is rapidly losing ground; but most other patients with cavitation and positive sputum, whose cavities cannot be closed by either phrenicectomy or pneumothorax, should be given a thoracoplasty or some other extrapleural operation to facilitate this closure and enhance the production of fibrous tissue which will cause cicatrization. I object to the statement, seen all too frequently in the literature, that the operative time has little or no bearing on the operative mortality. It is almost a byword, and certainly a catch phrase, that the speed of the operation should not be such as to prevent "gentle handling of tissues." Just what relationship speed has to gentle handling of tissues is difficult to understand. It is my opinion that a clean-cut, rapidly made incision with a rapid and careful removal of ribs causes far less trauma than the ponderous, slow method often employed. My operative time will average from seven to twenty minutes for completed thoracoplasty, and it is rarely indeed that I see the postoperative picture of shock, cyanosis, rapid pulse, and high elevation of temperature. A light gas-oxygen anesthesia is much better borne by the patient, and causes much less trauma to tissues and shock to the patient, than does infiltration with local anesthesia. I have not found it necessary in over two years to give any of the patients blood transfusions, and I believe firmly that if the technic of multiple-stage operations (rapidly performed) with judicious use of the middle stage operation is strictly adhered to, the use of blood or of acacia will be but rarely indicated.

DR. FRANK K. BOLAND, Atlanta, Ga.: I look on phrenicectomy as a forerunner of, a preliminary step in, the surgical treatment of pulmonary tuberculosis; I always expect to do a thoracoplasty later, but occasionally I get such excellent results from the phrenicectomy alone that I do not have to perform the further step. Phrenicectomy is not without danger. It does not do at all simply to cut the nerve; one must evulse it. If one simply cuts the nerve one does not get the accessory branches which join it in the chest. Often there is an accessory nerve of considerable size which runs into the phrenic nerve just below the subclavian vein. Occasionally this accessory nerve runs into the main trunk in front of the vein, whereas the phrenic nerve itself runs behind the vein, so that the subclavian vein is caught in the fork comprised by these two nerves. One case has been reported in which on evulsion of the nerve the subclavian vein was torn, and one can imagine what happened. At other times smaller veins get caught in the forks of accessory nerves running into the phrenic nerve. This operation must not be looked on as trivial, although it can be done in a few moments. These are exceptional cases which I mention, and usually one is able to evulse a long segment of the phrenic nerve and get good results.

DR. A. M. FORSTER, Colorado Springs, Colo.: As a medical man I cannot see the advisability of exercise before operation. All sorts of functional tests are tried, but if exercise is tried one never knows beforehand what the outcome of the operation may be. We medical men have got to depend on the surgeon's judgment as to whether that patient can stand the operation. I do not believe that the patient is prepared much better by walking exercise, provided he has definite evidence of toxicity, than by just following the surgeon's judgment or using some of the methods that have been mentioned for determining vital capacity. There is undoubtedly a compensatory emphysema of the contralateral lung, and in my opinion it is a favorable thing. It might be called an hypertrophy of the other lung. Those cases that show the compensatory emphysema or hypertrophy are the ones in which the patients are likely to do well following chest surgery. Anesthesia is of tremendous importance in thoracoplasty and I believe strongly that general anesthesia saves the patient from undue shock and that the local anesthesia, which permits what one might call a psychologic shock, is highly undesirable. It has not been mentioned so far that the use of the oxygen tent in addition to transfusion or the other methods following these operations is often of great importance. The question of secondary infection I think is also of great importance. Frequently there may be a virtually extinct tuberculosis, at least from the clinical point of view, but the patient is suffering from an extensive so-called secondary infection, which is markedly benefited by these operative procedures. I think that in these old cases the secondary infection is frequently the determining factor rather than tuberculosis.

DR. HORACE REED, Oklahoma City: I should like to stress in this discussion the cooperation between the surgeon and the phthisiologist. I have been doing this work for six or seven years and I find myself leaning more heavily all along on the phthisiologist. The treatment of tuberculosis is his problem. He encounters difficulties and he appeals to the surgeon to bring about certain conditions whereby he may make progress with the treatment of the patient. Surgery does not cure tuberculosis but it brings about conditions whereby the cure may be pursued with more success; hence it is largely the phthisiologist's problem, and it is his province to tell us what type of operation he wants us to do, whether he wants a complete operation, whether he wants it in the apex or below. Thoracoplasty is a formidable operation, and when once it has been performed one cannot recall the results; they are permanent. Hence, anything that may be done which carries with it less danger should be looked into before one resorts to thoracoplasty. The one operation that I like which the authors did not mention is the Jacobæus operation, or intrapleural pneumolysis. Before resorting to thoracoplasty, if the adhesions are not too extensive and if there is a considerable air space, one can easily look into the chest with a thoracoscope and often may find adhesions, which can be severed with a minimum of danger to the patient. It is easily performed, it is a minor operation, and it carries even less risk than phrenicectomy; it should be attempted, at least if there is any possibility of accomplishing something. The type of operation that I have been using or that I have been asked to do in the last few years has been a collapse of that portion of the lung in which the cavity exists. I do not necessarily start out to do a complete thoracoplasty or an operation of a certain type or size but am guided by the condition of the patient from moment to moment. I use local anesthesia first, but never do I touch the patient until he is at least unconscious under gas-oxygen, and by that means avoid shock from the noise of the crunching of the ribs.

Dr. Kennon Dunham, Cincinnati: I do not believe that whether one has speed or does not have speed is the great point, but trauma to the tissue certainly does harm. If one has a lot of oozing after the thoracoplasty, one may have infection and delay the second operation, whereas if one goes a little more slowly one may not have quite so much. If the patient is toxic, one should not do a thoracoplasty. It is wonderful how much section of the phrenic nerve will sometimes do, but one should not depend on it. One nearly always has to go on with the job. There are two kinds of emphysema. There is the emphysema that is compensatory, and then there is a degenerative emphysema with emphysematous blebs and lowering of the lung's vital capacity. All cases of tuberculosis that are arrested show emphysema to a certain degree, which is not all compensatory. It is a point that is not discussed much in the literature, but it is vital to this operation and it is vital to working out the case. Dr. Asbury and I apologize for not being able to tell more clearly what this effort syndrome should be and how to record it. We are sure that it is the only method that we have found on which we could depend.

TREATMENT OF ALIMENTARY TOXICOSIS

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AND
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The clinical picture of alimentary toxicosis in infancy is characterized by intensive diarrhea and vomiting, resulting in dehydration, impaired circulation, acidosis and other symptoms.

The pathogenesis of the disease is still subject to discussion. Lately, different theories have again been evolved, namely, that of endogenous ascending bacterial infection and the theory of the formation and absorption of toxic substances formed either by the abnormal breakdown of proteins or by bacteria that are absorbed through the damaged wall of the intestinal tract. A few months before this paper was written, Dodd[1] and her collaborators have reported that guanidine was found in an increased amount in the serum of children suffering from alimentary toxicosis, and that treatment with calcium was successful.

Numerous methods of specific and other treatment are advocated. Without discussing all the different means of approach, we wish to report how we are treating infants suffering from alimentary toxicosis.

The problem of alimentary toxicosis can be divided into two parts. The first, the pathogenesis, we leave aside, as we want to concentrate on the second part, the therapy, which requires more urgent attention.

We base our procedure on the following simple, fundamental ideas:

1. Diarrhea and vomiting, once established, are no longer specific, but are symptoms of an aspecific hypersensitiveness of the gastro-intestinal tract. Everything, even water or tea, may irritate and may sustain or increase vomiting and diarrhea.

2. Dehydration is a secondary symptom due to loss of water mainly by vomiting, diarrhea and respiration. The diseased organism or, rather, the diseased cells are unable to retain either water or salts (plasma). There is a tendency to excrete fluid by way of the intestinal tract. This may occur to such an extent that the output of urine suffers until it is almost suppressed. All this leads to acidosis and blood concentration with accumulation of catabolic products. Forcing fluid by mouth or even by parenteral administration does not necessarily lead to a sufficient retention of fluid. Even such forced fluid may be excreted in this undesired direction, namely, through the intestinal tract. The diarrheic character of the stools may continue, and the number of stools may increase.

3. The toxic symptoms of the disease are at least aggravated by dehydration. Therefore, of paramount importance in our plan of therapy was: (*a*) more radical and longer than usual rest for the gastro-intestinal tract, and (*b*) treatment of dehydration with an intravenous supply of fluid. The method of venoclysis (Hendon)[2]—intravenous drip—was added by one of us (Dr. Karelitz).[3]

METHOD

Our routine procedure was as follows: After the admission of the patient to the hospital, from 100 to 250 cc. of a 5 per cent solution of dextrose in physiologic solution of sodium chloride or in Ringer's solution was given rapidly in the first fifteen to twenty minutes, after which the flow was reduced to from 15 to 40 cc. per hour (from 5 to 10 drops a minute), and this dosage was continued until the child was completely detoxified. The amount of fluid given daily was calculated according to the Pirquet system of nutrition, and was limited to 4 decigrams per centimeter square of the sitting height squared, which corresponded to about 2 ounces of fluid per pound.

Furthermore, as soon as possible after the venoclysis was started, a transfusion of from 75 to 150 cc. of citrated blood was given through the same cannula in about twenty minutes.

To improve the circulation, caffeine or epinephrine was administered in the same way. (From 1 to 2 cc. of epinephrine [1:1,000] was added to 250 cc. of dextrose solution, thus yielding from 0.13 to 0.33 cc. per hour.)

A twelve hour period of complete oral starvation was started. During this time only enough water was given to wet the mouth and the pharynx. In order to give the children as much rest as possible, after a short preliminary examination, only necessary examinations were made by the physicians. If it was important to take the temperature, it was taken in the axilla but not by rectum. Whenever possible special nurses took care of the children.

After the twelve hour period of starvation, from 10 to 20 cc. of water was offered every two hours. If the water was refused or if it was vomited, oral feeding was omitted, and an adequate increase in the flow into the veins was substituted. The administration of a milk mixture was started only when the detoxification seemed complete and *not before the lapse of thirty-six hours*. A simple 2:1 mixture of milk and water, boiled for three minutes, plus sugar in an amount of 5 per cent of the total volume was offered. From 5 to 10 cc. of this formula was given every two hours at the beginning (½ decinem according to the Pirquet system). The amount was increased daily for the next three or four days (an increase of from 5 to 10 cc. for each feeding, or a total daily increase of from 60 to 120 cc.). After that a similar addition was made every two or three days. The venoclysis was discontinued after all signs of toxicosis had disappeared.

If the symptoms of toxicosis recurred, the entire routine was repeated, except in cases of mild setbacks. The complete procedure is used only in decidedly toxic and severely toxic children. Acidosis and concentration

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From the Pediatric Department, Mount Sinai Hospital.

Read before the Section on Pediatrics at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Dodd, Katherine; Minot, A. S., and Casparis, Horton: Guanidine as a Factor in Alimentary Intoxication in Infants, Am. J. Dis. Child. **43**: 1 (Jan.) 1932.

[2] Hendon, G. A.: Venoclysis, J. A. M. A. **95**: 1125 (Oct. 18) 1930.

[3] Karelitz, S.: Treatment of Toxicosis with the Aid of a Continuous Intravenous Drip of Dextrose Solution, Am. J. Dis. Child. **42**: 781 (Oct.) 1931.

of the blood were determined by chemical and other laboratory methods. Fifty-three children have been treated by this method. Fifteen were from 26 days to 3 months of age; eighteen, from 3 to 6 months, and twenty, from 6 to 12 months. About half of the children were Porto Ricans; the rest were white. Most of the children were underweight, and 10 were marantic, indicating a very poor nutritional history. About 50 per cent of them had complicating infections.

The intravenous route of fluid supply seems to us to be the most advantageous one for the continuous administration of fluid. The disturbances caused by fluid injected subcutaneously or intraperitoneally were thus avoided, and so we were able to give the child real rest. Furthermore, subcutaneously administered fluid is not well absorbed in cases in which there is a poor circulation. Hypertonic solutions can be given intravenously without the consideration of absorption, which causes concern when fluid is injected by other routes.

Since the fluid injected by venoclysis contained 5 per cent dextrose, complete oral starvation could be resorted to for a period of twelve hours, and the further omission of all food except water by the oral route could be continued for as long as was found necessary to stop all symptoms and restore the normal function of the intestinal tract. The dextrose served as food (from 80 to 160 calories daily), as a diuretic and as a stimulant to the heart and other muscles; it probably replaced some of the glycogen in the liver, thus aiding the function of the liver, and it may have helped the metabolism of fat. A 10 per cent solution of dextrose, desirable from the point of view that more calories would be supplied, proved to be too strong. Glycosuria resulted, and in some cases lasted for twenty-four hours or longer. During this period the urine excreted exceeded the amount of fluid consumed, thus increasing the dehydration.

By using physiologic solution of sodium chloride or Ringer's solution as a solvent for the dextrose, some of the lost electrolytes were replaced, and the solution was made hypertonic, thus aiding the diuresis. Although the solution was hypertonic, it was readily taken up by the tissue because of the slow rate of administration and, also, possibly because the fluid of the tissues may have been even more concentrated than the fluid injected. No difference was detected between the reaction to physiologic solution of sodium chloride or Ringer's solution. The children who had hyperchloremia on admission showed improvement and reduction of the blood chlorides, despite the administration of sodium chloride solution.

TECHNIC OF VENOCLYSIS

The child has to be fastened to the bed. The cubital vein or a vein in the leg is used, the arm or leg being fixed to a padded splint, which, in turn is tied to the bed. The vein is exposed, procaine hydrochloride being used for local anesthesia; the vein is tied twice with catgut ligatures after the cannula (Lindeman no. 18 or 19) is introduced, and the proximal loop of catgut is fixed over the needle. The attachment is the usual one used for intravenous therapy (gravity outfit with rectal drip bulb and a thumb screw clamp). In only about one third of the cases, and then after many hours of treatment, did the cannula become clogged so that it could not be cleared by probing and suction. Another vein had to be prepared if the venoclysis was still considered necessary. The period of venoclysis varied from nine to one hundred and fifty consecutive hours, usually being between from thirty-six to seventy-two hours, during which time from 350 to 800 cc. of fluid was administered daily.

As already mentioned, the milk formula offered after the period of starvation was a simple mixture of two thirds milk, one third water and 5 per cent added cane sugar. The fact that the amount of food is small is apparently more important than its quality. The long starvation may improve the tolerance for such simple prescriptions. It requires further study to learn whether other formulas, such as buttermilk, etc., might have avoided the occasional recurrence of diarrhea or abdominal distention which we encountered.

If doubt existed as to the advisability of starting the administration of food or of increasing the formula, it was always considered safer to delay the change. In many cases the formula was started before the venoclysis was stopped. This usually occurred when the child did not take sufficient fluid by mouth, even though he was no longer toxic.

CHEMICAL ANALYSIS OF THE BLOOD

The carbon dioxide-combining power of the blood served well in orienting us as to the child's condition. It was always regarded along with the clinical picture, since in a few of the most toxic children the carbon dioxide-combining power was relatively high. However, it was usually low on admission (from 12 to 30 per cent by volume and rarely up to 35 per cent), and it rose quickly with clinical improvement. Failure of the carbon dioxide-combining power to rise or to drop after improvement usually indicated that the treatment was inadequate.

The azotemia cleared up within the first twenty-four hours of treatment in all cases in which recovery occurred. Azotemia was present in about 25 per cent of the patients on admission.

The serum protein was determined in a few cases and was found to be elevated. More studies in this direction are necessary before we can take a definite stand as to the value of the serum protein in the diagnosis of the severity of toxicosis.

The blood sodium chloride was elevated above 0.7 per cent in several of the cases and seemed to follow the carbon dioxide-combining power in its return to normal. The sodium chloride dropped in these cases, despite the injection of physiologic solution of sodium chloride.

RESULTS OF TREATMENT

Our treatment has now been carried out for the past two and one-half years. Among fifty-three cases, the mortality was six, or 12 per cent. This must be compared with an average mortality of 64 per cent for the preceding ten years at the same hospital. Five additional patients treated in other institutions by the same routine recovered.

The children so treated showed an almost immediate general improvement after the venoclysis was started and an even more marked improvement after blood transfusion. The first evidences of improvement were a stronger pulse, better color, faster breathing, a clearer and more alert mental state, better turgor and increased kidney function. Acidosis disappeared and the chemical composition of the blood became normal. In every case vomiting ceased immediately. Abdominal distention occurred occasionally and was always regarded as a dangerous sign. The diarrhea was lessened in many cases, and it was completely stopped in ten children immediately after treatment was started. During 1931, the average duration of diarrhea after the starting of treatment was three days, with the maximum duration of nine days.

Our procedure seems to represent decided progress in the treatment of severe forms of alimentary toxicosis.

1095 Park Avenue—17 East Eighty-Fourth Street.

ABSTRACT OF DISCUSSION

Dr. Horton R. Casparis, Nashville, Tenn.: There is one thing the authors mentioned that is extremely important, and that is the administration of fluids, not only getting the fluids in but maintaining them. I have noticed that after I have given the patients a good deal of fluid and am waiting for something to happen, when they absorb the fluid they go right back into their old symptoms. I think that is extremely important. I too have used transfusions extensively. In some cases the results were not quite favorable.

Dr. C. Ulysses Moore, Portland, Ore.: My first experience in the use of dextrose in diarrheal conditions began in January, 1919, thanks to the research laboratory of Dr. Hektoen in Chicago, who suggested, from his work on dogs, that it would be perfectly possible to use dextrose subcutaneously with babies. So for the last fifteen years I have been using this extensively; it is so much simpler than the intravenous route that anybody can give it either in the home or in the general hospital. I tried first the 10 per cent and then the 15 per cent solution of dextrose in physiologic solution of sodium chloride. A solution of 20 per cent or so gave such a low absorption rate that it was not practical for subcutaneous use, but a 10 per cent solution gave just as satisfactory results. As a routine, therefore, I use the blood and the dextrose subcutaneously, usually giving the new-born 150 cc.; I have given as much as from 5 to 7 per cent of the body weight in the new-born, 5 per cent being approximately the right amount. That is followed up with 10 per cent solution of dextrose in physiologic solution of sodium chloride, about 200 cc. being given perhaps as much as four times a day, twice a day, or as often as may be necessary. That has given satisfactory results and can be done quickly.

Dr. Harry Lowenburg, Philadelphia: I have used Dr. Schick's method and apparatus in the Mount Sinai Hospital, Philadelphia. Fortunately, cases of intestinal toxicosis are becoming rare, because of better methods of artificial feeding, the result of long continued prophylactic propaganda. In these cases it is essential if possible to remove the cause as, for instance, when a parenteral infection exists, as middle ear disease or pyelitis or adenitis or something similar. All such lower the tolerance for food. Not all these cases therefore are essentially and primarily food injuries. Not only is this method of introducing fluids of value in intestinal toxicosis but it has been employed to great advantage in septic cases as, for instance, meningitis when forced spinal drainage was employed. It has been used especially in streptococcic meningitis and acute febrile pyuria (pyelitis) when it was desired to administer fluid continuously. The technic has not always been perfect. On several occasions there has been trouble. The fluid sometimes stops flowing. Edema of the arm or leg has developed wherever, at the time, the fluid happened to be administered. Have the authors had an experience of this sort and if so how do they account for it and how do they handle it? The temperature of the fluid, provided it is not too low, is not as important as formerly it was thought to be. The rate of flow of the fluid into the circulation is of greater import than maintaining a constant temperature of the fluid in the receptacle. If the fluid cools the blood, likewise the blood will warm the fluid. I have found that if there is proper control as to the rate of introduction, from about ten to fifteen drops a minute, it is not necessary to maintain the fluid in the receptacle at a definite temperature.

Dr. F. J. Schatz, St. Cloud, Minn.: There is a question I should like to ask the authors. What would they do if the patients were treated in the country, and what methods would be used to treat these patients when it is necessary to use medication by mouth? I have had some experience in treating diarrheas. I have checked the vomiting by using hot water, plain, or with alkalis; also, as was suggested by one of our members, by the use of raw apple juice and pulp. It is surprising what results one gets in these cases with that type of treatment.

Dr. Béla Schick, New York: We use drugs for purposes of stimulation only (epinephrine, digifoline-Ciba). If the child is extremely restless we give tincture of opium. That is the only medication used. The injection of fluid subcutaneously, of course, supplies fluid, but it means a great disturbance to the child. Furthermore, if the circulation is poor the absorption may be too slow and these are just the cases in which the fluid is needed most urgently. Many hours after injection the fluid can still be seen around the place of injection. If the intravenous administration of fluid is impossible the subcutaneous method has to be used, but we give preference to the intravenous method. We are against rectal administration of fluid. This procedure irritates the intestinal tract too much and increases the peristalsis. As already mentioned, we do not even take the temperature by rectum. The use of the intravenous drip method in other diseases is of great value. We apply it not only in alimentary toxicosis but in diabetic coma, meningitis, tetany and other conditions in which we have difficulty in supplying fluid or nourishment in other ways. An edema-like swelling occurs if the needle is not in the right place. At the beginning we were much concerned about the temperature of the dextrose solution. The container is kept warm by putting rubber bottles filled with warm water around it. More is not necessary. The intravenous drip method may be difficult to carry out in the country, and in that case of course the fluid has to be given subcutaneously. In the city the method can be used in private practice if a competent nurse supervises the procedure and the physician can visit the child from time to time. The main thing in the whole treatment of alimentary toxicosis is to give rest to the intestinal tract. We give no milk until from thirty-six to seventy-two hours after the treatment has been begun. That is about enough time for the intestinal tract to resume its normal function.

PROLAPSE OF THE RECTUM

ITS RECLASSIFICATION AND SURGICAL TREATMENT

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DETROIT

Prolapse of the rectum is an inclusive term indicating an abnormal descent, in varying degrees, of one or all layers composing the pelvic colon and rectum.

In this discussion, I wish it understood that it is not my intention to be hypercritical of others, nor do I claim any particular originality. I have reclassified prolapse of the rectum, calling that condition which has always been classified as third degree, first degree; the condition of complete prolapse commonly referred to as first degree, I have reclassified as third degree or complete colorectal and anal prolapse. The principle of the operative technic that I shall describe was outlined early by Lenormant;[1] he claimed priority for Jeannel, who by a colostomy in 1899 held the ptosed colon in position for the cure of rectal prolapse. The technic that I employ is a modification of that of Sir Charles Ball,[2] who reported five cases in 1907. I believe his technic to have been almost submerged, owing to a misleading classification with a resulting misconception of the fundamental etiology. Many ingenious and complicated methods for fixing the rectum only in situ have followed, while conditions above the rectum, which must be considered fundamental in the development of prolapse, have unfortunately been disregarded.

CLASSIFICATION AND DEFINITION

The following classification was determined by the extent or degree of the prolapse and the sequence of its development:

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Lenormant, C.: Rev. de chir. **35**: 191 (Feb.), 443 (March) 1907.

[2] Ball, Charles B.: The Rectum and Anus, London, Cassell & Co., Ltd., 1887.

I. *First degree*: internal or "concealed" prolapse; invagination of (sigmoid) pelvic colon into rectum; ptoses of pelvic colon.

II. *Second degree*: rectum is protruded through anus. (A perianal sulcus is present; the anus is not involved.)

III. *Third degree*: prolapsed colon, rectum and anus (no perianal sulcus present). Complete anorectal prolapse. Procidentia.

IV. Partial or mucous prolapse. (Commonly seen in childhood.)

ETIOLOGIC PATHOLOGY

I shall quote from the late James Tuttle,[3] whose pioneer work in America forms most of the background of subsequent American treatises on the subject of proctology. It should be borne in mind that he used the earlier or reversed classification.

> It will be remembered that the latter (rectum) is held in position by several different classes of supports. The lower portion is maintained in position by the levator ani and external sphincter muscles, the perineal fascia and fibrous attachments to the coccyx, and the prostatic or vaginal walls; the middle portion is supported by the loose fibrous tissues which pass off from the sacrum along the course of the lateral sacral arteries and line the upper surface of the levator ani, thus connecting the organ with the osseous frame of the pelvis. The superior portion is held in position by the peritoneal folds which connect it with the pelvic walls upon the sides, the bladder or uterus in front, and with the sacrum behind, *where the mesorectum and mesosigmoid comprise the chief support of the intestine* (my italics). In order that procidentia may occur there must be a weakening or destruction of these supports as well as some force capable of dislodging the organ from its position. The passive supports, composed of fibrous and elastic tissues, lose theirs through atrophy, injury, or paralysis. In procidentia of the first (third[4]) and second (second[4]) degrees, the pathologic changes consist in alterations in the muscular apparatus and fibrous attachments of the lower end of the rectum to the surrounding parts; in that of the third (first[4]) degree the alterations take place in peritoneal, vascular, and connective-tissue supports. The latter condition is always of a gradual and slow development; the former (second and third) may come on suddenly from accident or injury, *or it may devolop from the extension of a procidentia of the third (first[4]) degree* (my italics).

Tuttle[3] said:

> Speaking from a mechanical point of view, this degree (third) is only the first step of the second degree of procidentia, only it is higher up and in the majority of cases never proceeds to actual protrusion through the anus.

Thus Tuttle early recognized colorectal invagination as the first degree in a prolapse sequence. Mechanically, a second or third degree prolapse cannot occur unless the mesocolon has abnormal mobility. The pelvic colon cannot be satisfactorily entered with the sigmoidoscope if it has a short mesosigmoid, yet when supported by a longer mesion examination is usually satisfactory. In the first group prolapse cannot develop, while in the second group it could develop if the fixed areas[5] were loosened and the mesion were unusually long. When for any reason this condition develops or already exists, one may readily understand the tendency for the loose pelvic colon to descend and occasionally to protrude into the fixed rectum. It is thus that a first degree prolapse begins, and may exist for years before the rectal supports, or *second line of defense*, become loosened and the second degree of prolapse develops. In the *second* degree, with the rectum repeatedly protruding through the anus, it should require but little imagination or anatomic knowledge to understand that the anus could and would finally evert with a completely developed colorectal and anal prolapse, or a third degree—not a first degree as it has previously been classified. The predisposing or primary cause of prolapse, then, is a congenitally long mesocolon with abnormal mobility of the fixed areas. The precipitating causes may be one or more of the innumerable assigned causes spread through the pages of presumed authoritative treatises, such as stricture, neoplasm, colitis, proctitis, hemorrhoids, impaired sphincter, wasting diseases, polyps, postpartum conditions and the like. Surely you have seen many people with such conditions, yet it is but occasionally that you have seen a prolapsed rectum; I do not refer to the mucous prolapse of children and the aged or to an exaggerated physiologic eversion of the mucous membrane of the rectum. May I venture the guess that many of you never have seen a prolapsed rectum, and the suggestion that if prolapse was caused by these innumerable conditions, it would be more commonly observed by the average physician? When man walked on all-fours, his colon was suspended as nature intended it to be; he was not then troubled with prolapse. But with the functioning colon suspended in a perpendicular position, is it surprising that the fixed areas stretch out in the predisposed person, permitting the development of a rectal prolapse?

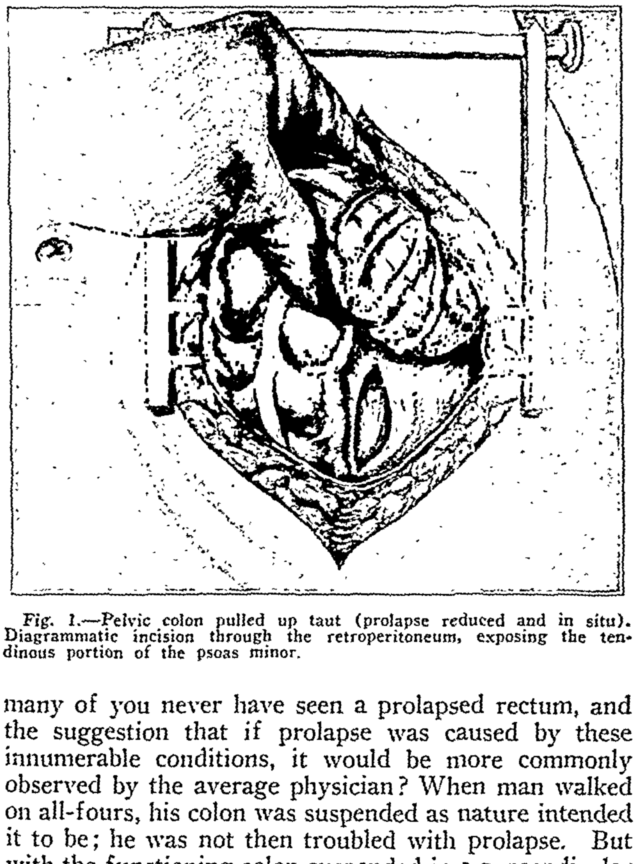

Fig. 1.—Pelvic colon pulled up taut (prolapse reduced and in situ). Diagrammatic incision through the retroperitoneum, exposing the tendinous portion of the psoas minor.

DIAGNOSIS

In the first degree of prolapse if colorectal invagination occurs, intussusception is found in the ampulla of the rectum. If it were to prolapse through the anus, a second degree diagnosis would be a pardonable error, but differentiation would be made by finding a deep sulcus extending through the anus into the lumen of the rectum. The condition can best be studied and diagnosed with the proctoscope. In the knee-shoulder position, with the back sagging, the internal "concealed" prolapse should demonstrate itself through the proctoscope if the patient strains, receding during the intervals between the straining efforts. The protrusion should be seen with an orifice at the apex, and can usually be felt digitally. Low backache, a symptom of internal hemorrhoids, usually accompanies first degree prolapse with an associated pelvic and perineal pain. A history of "colon constipation," which was described by Arthur Hurst[6] as "dyschezia," is usually given. Cathartics seem to exaggerate the symptoms; enemas relieve them and produce evacuation by reducing the invagination. Mucus and blood, flatulence, cramps and other associated symptoms can reasonably be expected in such a condition of long standing. Indeed, the diagnosis of first degree prolapse requires understanding and an experienced examination. Gastroenterologists should find them frequently.

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[3] Tuttle, James P.: A Treatise on Diseases of the Anus, Rectum and Pelvic Colon, New York, D. Appleton and Company, 1902.

[4] My classification.

[5] Junction of the rectum and the sigmoid (pelvic colon); junction of the iliac colon with the sigmoid.

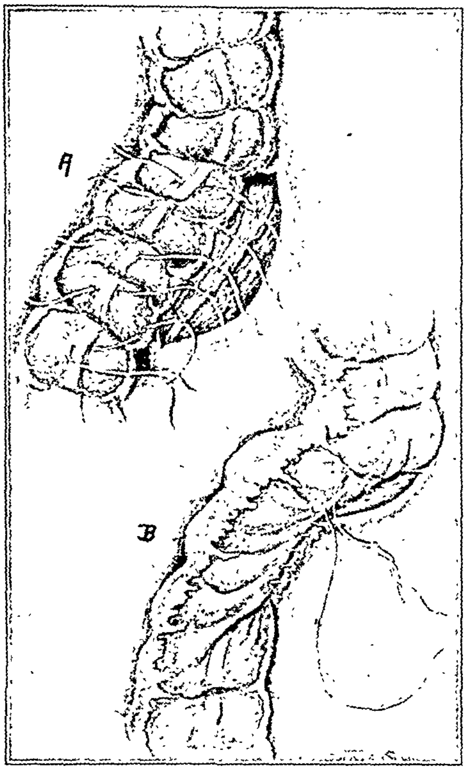

Fig. 2.—*A,* chromicized gut sutures placed for fixation. *B,* lateral peritoneal edge of wound sutured to colon, covering the exposed fixation area.

Further diagnostic discussion of second and third degree prolapse is superfluous.

MUCOUS OR PARTIAL PROLAPSE IN CHILDREN

The etiology of prolapse in children may be considered in principle only, the same as in adults; the prognosis is good for recovery without operation. Compared with the adult, a child's colon is disproportionately long, but as he grows taller and the sacral curve develops, the slack is usually taken up, which accounts for actually "outgrowing" the prolapse. It is the consensus that the rectal muscle is not commonly involved. Polyps and constipation seem to be the common etiologic factors. Fixation in situ by linear cautery is simple, rational and satisfactory, requiring but a few days for recovery.

OPERATIVE TREATMENT

If the pelvic colon is pulled up until the rectum is taut and is fixed there, the prolapse is cured. It is perfectly reasonable to believe that occasionally some supplemental repair may be desirable. Such local measures may include plastic anal repair, rectopexy, posterior colporrhaphy, shortening the round ligaments (never ventral fixation of either the uterus or the colon), vaginal excision of Douglas' pouch when an enterocele is present, closing the culdesac, perineal repair, etc. These supplemental operations should not be considered as strictly necessary in colon fixation.

COLON FIXATION; COLOPEXY

A left rectus incision extending from the pubes to the umbilicus is made with a high Trendelenburg position (figs. 1, 2 and 3). Assisted by a self-retaining retractor, the small bowel is packed off, exposing the colon, which is pulled up taut and quickly tried in position to determine the exact and relative location of the proposed fixation. The general location of the left ureter, mesial to the psoas major, should be borne in mind. The psoas minor,[7] which is a tensor of the iliacus fascia and has some mobility, makes an excellent location for the fixation, the tendinous portion being used, as illustrated (fig. 2). The iliacus fascia is more commonly used with no particular advantage other than it is always present and accessible. A 3 or 4 inch incision is made through the retroperitoneum and areolar tissue over the site chosen for fixation, the tendon or fascia being exposed. A number 1 chromicized gut suture is first placed through the longitudinal band of the colon, a little below a point where it is then to be inserted into the psoas minor or the fascia of the iliacus, and left untied. Four or five sutures are then placed about one-half inch

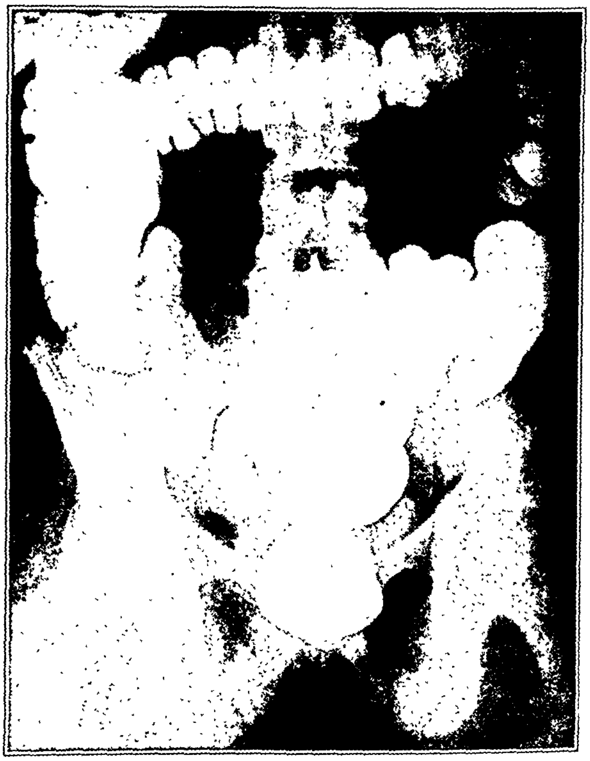

Fig. 3.—Roentgenogram of rectum and colon made two years following technic described for rectal prolapse. Discloses redundant pelvic colon complicating the colopexy. Patient has had absolutely no adverse symptoms, such as constipation and colic and no prolapse.

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[6] Hurst, Arthur F.: Constipation and Allied Intestinal Disorders, ed. 2, London, H. Frowde, 1919.

[7] The psoas minor is a long slender muscle, partly tendinous and often absent, lying in front of the large psoas major.

apart in relative positions. When the first or lower suture is tied it pulls the colon up and in approximation to the exposed fascia; the other sutures are then tied successively. The lateral or outer edge of the peritoneum is sutured lightly over this fixation area to the colon, a fine needle with fine plain catgut being used, thereby covering all raw areas. It has been found unnecessary to suture the mesial edge of the peritoneum to the intestine, since it is in apposition to it after the fixation sutures are tied. It has also been found unnecessary to denude the colon at the area to be fixed. The usual abdominal closure completes the operation, and routine postoperative care is given with the patient in bed for at least ten days. A daily saline enema with evacuation in the recumbent posture is suggested for thirty days.

SUMMARY

1. A logical nonconfusing classification is arranged based on the etiology and sequential development of the prolapse.

2. A simple method of correcting the causative factors is described, having the advantages of simplicity, speed, safety and permanence.

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ABSTRACT OF DISCUSSION

DR. JEROME M. LYNCH, New York: I think Dr. Martin's reclassification of prolapse is excellent. The operation described by him may give good results in his hands, but in mine it hasn't been very successful. There are certain basic principles which must be understood in order to work out properly the suitable operation for this defect. Todd has pointed out that the levator ani muscle is not important as a rectal support. This is evident to any one familiar with excision of the rectum. If the levator muscles are severed, the intestine cannot be delivered through the wound without cutting the lateral ligaments. But when the lateral ligaments are severed, the rectum and a considerable length of pelvic colon can be withdrawn through the perineal wound. Granted that the lateral ligaments are the chief support of the rectum and that these ligaments are composed of connective tissue, the quality of this tissue is fundamentally important. The problem of curing prolapse involves the replacing of all structures in their normal position, overcoming structural weakness, diminishing slack, and so arranging the peritoneal pelvic diaphragm that there will be an equal distribution of pressure. Any operation, to be successful, must not only be anatomically correct but also take into consideration the best means of obviating recurrence. I believe the procedure that I have devised and successfully carried out is based on sound anatomic and physiologic principles.

DR. MAURICE LESCALE, New Orleans: I think that Dr. Martin's classification should be adopted, because it simplifies the matter and puts it on an absolutely correct basis. Under the older classification one might get the mistaken idea that the three different classes or stages were separate entities, whereas Dr. Martin's classification makes it plain that the three classes of prolapse are only different stages of development of one and the same condition. This point is important because it should be of much assistance in the matter of diagnosis. Cases of Martin's first degree prolapse are going undiagnosed because many men think that it is a rare condition about which they know little or nothing. However, this new classification should impress on these people who can't help but recognize second and third degree prolapse that they are dealing with the fully developed condition, and this should cause them to be more on the alert to recognize the first degree cases as they present themselves, because the first degree cases are much more difficult to diagnose. The head of a large general clinic who has operated in several cases of complete prolapse said he had never seen a case of colorectal intussusception, first degree prolapse, and I think it is the haziness of the older classification and nomenclature that can account for this. The week following the annual session in 1931, Dr. Miller and I did a colon fixation for first degree prolapse. The patient is a traffic policeman stationed outside the convention auditorium. Yesterday he reported that he is symptom free, which makes practically one year's duration.

DR. LOUIS J. HIRSCHMAN, Detroit: In following out the real etiology of colorectal prolapse, if one considers the normal demarcation between rectal and pelvic colon as opposite the third sacral vertebra, there are many cases which would fall into Dr. Martin's classification which are really more colonic than rectal. However, the rectum will follow later in the progress of the disease. Of course, the pelvic colon normally intussuscepts during defecation to a certain degree, and people who have considerable difficulty with defecation are likely to put an undue strain on this colon. Normal intussusception is increased not only by obstructive difficulty but also, of course, by a congenitally long mesocolon. In addition to the prolapse, one may also have (as was mentioned) an eversion of the anal canal; in other words, one may get two distinct conditions present at the same time, and Dr. Martin recognizes this by the fact that he rightly performs an intra-abdominal operation for the relief of the main condition, and subsequently an operation for the relief of the secondary condition. It is quite logical, as Dr. Martin has stated, the grave condition, namely, the intussusception of colon into the rectum, should be treated by intra-abdominal means. As far as personal opinion is concerned, I have never believed that when it is possible physiology should ever be deviated from in treatment or that an organ which should be normally mobile should ever be abnormally fixed. If that sigmoid or pelvic colon can be restored to its normal location without the movable muscular wall being fixed in any way, it would be better. Before the meeting of the British subsection on proctology in London, in 1924, I presented a paper showing a technic for this particular type of suspension or fixation which did not require the placing of any stitches through the muscular wall. Instead of attaching the peritoneal wall to a muscle or peritoneum, or anything else, all I did was to draw out of the pelvis the redundant or intussuscepted colon (rectum and colon) and obliterate the fossa between the opposing folds of mesentery. I put in stitches that paralleled the blood vessels. By sewing mesentery to mesentery, what was formerly a sulcus becomes a double thickness mesentery, drawing the rectum out of the intussuscepted condition, and, without doing more than doubling the normal support, decreasing the length of the mesentery and thickening it by disposing of the sulcus. So, after the stitches are placed, the sigmoid is drawn out by merely sewing mesentery to mesentery. I call the operation mesomesosigmoidopexy. It does not involve stitching the bowel to anything and it does not interfere with peristalsis. I have been using the operation for more than fifteen years and it has been highly effective. If, in addition, there has been an eversion of the anal mucous membrane, that is taken care of also. The colon is not fixed to anything. The mesosigmoid, which is the normal support, is strengthened and doubled, and it draws the prolapse out of the pelvis, and the sigmoid functions normally.

DR. C. C. MECHLING, Pittsburgh: I agree with Dr. Lynch that the rôle of connective tissue in the support of the rectum has not been fully appreciated. In dissecting the rectum, one will be impressed by the two connective tissues which I believe to be the whole support; namely, the lateral ligaments and the retrorectal connective tissue. Lockhart-Mummery called particular attention to that in his effort to increase or produce a hyperplasia of the retrorectal connective tissue. The shortening of the ligaments of the rectum would be the ideal method of fixation of the intestine; theoretically it would be a good way, but practically it is a difficult one of accomplishment. This treatment of Dr. Martin's to me is logical and sound. I am glad to hear him reclassify the subject of prolapse of the rectum. The treatment nowadays, of course, rests on a substantial anatomic basis. It varies greatly from the early concept of the surgical treatment of prolapse of the rectum, when it consisted of making a stenosis of the anal orifice. Some of us have seen cases in which this treatment was applied and usually not very effectively. I merely mention this to give me a text to report a case seen less than a month ago in Pittsburgh, where an Armenian woman, aged 26, was referred to the proctologic dispensary on account of an intestinal upset. She had been through the medical clinic and was referred to the proctologic clinic because she complained of constipation. She was seen by Dr. Zimmermann, who found a tumor above the pubis, which was movable abdominally. A digital rectal examination was made and a large impaction discovered. In a detailed examination he found a rough metallic substance buried underneath the skin and referred the patient for roentgen examination. A buried wire suture was discovered. When the patient was 4 years of age she had a prolapse of the rectum. She lived in Constantinople. An "operation" was performed. She has had eight children. That helps to remove the concept that probably foreign bodies could not be inserted in the peritoneal tissue with safety. The wire apparently allowed for a maximal contraction of the anus but did not allow for a maximal dilatation of the anus, which was probably the cause of the impaction. The patient refused to have any operation and after three or four visits to the clinic she was relieved of the impaction, but the wire still remains.

Dr. Louis A. Buie, Rochester, Minn.: As far as the operative treatment of prolapse of the rectum is concerned, I think that is, as it has always been, a matter of personal choice. One man gets a good result with one method and another with another method and, after all, I am not quite sure that anybody is getting entirely satisfactory results with any of those methods, and it is a question of the individual type of condition one is dealing with which demands more or less of a departure from the formula in each particular case. This classification of prolapse is highly acceptable, though I fear we shall probably slump back into the old classification as we have always done—that is, almost always. I think that it might be a good idea if we would exert ourselves a little more than usual in an attempt to try to establish this simple and satisfactory classification.

Dr. Edward G. Martin, Detroit: I realize that any operative procedure which may be suggested is subject to proof by trial and properly debatable. The operation that I have advocated is not new in principle, but modified and simplified. I have had the opportunity of observing several of the cases over a sufficiently long period to know that the results are satisfactory if the technic that I have outlined is followed and competently performed. There are two "fixed areas" that I referred to in my paper and locate; their location is at the junction of the rectum and the pelvic colon, and at the junction of the pelvic colon and the iliac colon; this is referred to in my paper by reference and described in Gray's Anatomy. The mesentery of the pelvic colon must be congenitally long, and those two fixed areas must be abnormally loose before a rectal prolapse is possible. This condition does not cause but permits of the development of prolapse. In my opinion, the results of any operation on the mesentery as described by Dr. Hirschman are subject to a similar criticism of results as when suspension is done to the peritoneum—the abdominal peritoneum in particular; it may stretch out and permit a recurrence. If the colon is fastened to the fascia or the psoas minor muscle, there is no tissue involved in the procedure which can stretch out. In a recent case of prolapse of the rectum in which I operated according to the technic described, the history was given of a complete prolapse and operation fifteen years earlier; this condition was satisfactory for seven years, when the patient had a recurrence, and he had been so troubled since that recurrence. At operation, I found that a suspension had been made to the abdominal wall and that a broad and long peritoneal ligament, if it may be so called, was present and of sufficient length to permit of the recurrence. I dissected this out before doing the fixation. May I repeat that the psoas minor muscle is occasionally absent, which accounts for my mentioning that the fixation to the iliacus fascia has proved highly satisfactory and is accomplished following the same described technic. When one pulls the colon up taut and fastens it there, the prolapse is cured.

DRUG ADDICTION AND MEASURES FOR ITS PREVENTION IN THE UNITED STATES

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The better orientation of public policies adopted for the solution of the so-called narcotic drug problem [illegible] f when, where and under what [illegible] occurs.

The practice of indulging in habit-forming drugs, like the problem of chronic alcoholism and mental disorders, is not limited to any one class of society; the high, the low, the rich, the poor, the weak and the strong are all represented. It has been estimated that 80 per cent of the present addiction occurs in the land of "Hobohemia," or in the underworld. This estimate is probably based on the fact that drug addicts of the underworld are more apt to come under observation, whereas those of the so-called middle and upper classes are usually inaccessible for observation, and the incidence of addiction is unknown.

It is interesting to observe that repeated prison sentences are imposed more often on drug addicts than on other types of federal prisoners, those with three or more prison sentences occurring twice as often among addicts. This contrast is decidedly greater for the country as a whole, however. This situation of repeated prison sentences challenges the usefulness of handling drug addiction through prison sentence alone.

The desirability of modifying pertinent public policies is suggested by the variation in the time elapsing between the ages when addiction becomes established and the age when such individuals are sentenced to prison for the first time. Approximately half of the narcotic drug addicts sentenced to prison for the first time have been addicted to the use of habit-forming drugs for eleven or more years; about 25 per cent have been addicted for twenty or more years, and 25 per cent for six years or less. In general, those addicted earlier in life have a greater time elapsing between the date when addiction becomes established and the date of first prison sentence. These factors suggest that, so far as remediable public policies are concerned, drug addiction has been regarded as a penal and correctional problem, like that of the insane of an earlier day, without cognizance being taken of its medicosociological and economic significance.

It is desirable to point out that no one occupation possesses a monopoly of the practice of using habit-forming drugs, and no nationality, race, color or social class is exempt, for drug addicts are found in most unexpected places.

Contrary to widespread belief, some drug addicts are engaged in lawful and gainful occupations. These comprise users accustomed to small doses that are kept constant for years. Those tending to increase their dosage are more often found among the irregularly employed, the unsteady, and the floating, loafing, "racketeer" population of a community. The migratory habits and unfixed residence of these people are proverbial.

Males predominate among drug addicts coming within the field of observation in the proportion of about four

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Clinical lecture, read at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 9, 1932.

white males to one white female. The proportion of women is somewhat higher among the Negro group. A very large number of women drug addicts who come within the scope of observation are prostitutes.

The distribution of drug addicts observed among the white and the Negro populations shows higher quotas among the Negro group, especially for Negro females, when compared with white females. Studies of the nativity of drug addicts indicate that there is no significant difference in this respect from that observed in the general population. The foreign born, the native born of native parentage, and the native born of foreign or mixed parentage occur in about the same proportion in the addict and in the general population groups.

Separation and divorce are more common among drug addicts than in the general population, divorce occurring about five times as often. Widows and widowers are also found more often among addicts. Marriage among female drug addicts occurs in about the same frequency as marriage among females of the general population. Marriage of male addicts, however, occurs with less frequency than marriage of males in the general population, there being a disproportionate number of single men without homes or without family ties among them.

The educational status of persons addicted to the use of drugs is somewhat higher than that of the general population; illiteracy, however, occurs somewhat more often among those addicted. About the same proportion of drug addicts finish the fifth and the eighth grade in schools, enter and finish high school, or go to college, as is observed in the general population. There is, however, a relatively higher proportion of the professional classes in the addict group.

Drug addiction is most prevalent in the larger urban centers. It is also observed in smaller cities and towns, and in rural communities. Studies of the commitments of drug addicts to prisons, jails and reformatories throughout the country show variability in geographic origin. Investigations of prison commitments for violation of the narcotic laws indicate that drug addiction is very widespread and that its geographic distribution corresponds generally with the density and geographic distribution of the general population of the country. This is true for those who are registered to deal in and handle narcotic drugs and for those who are unregistered.

Persons addicted to the use of habit-forming narcotic drugs are found in all age groups above the age of 15 years. Relatively few come under observation during the first two decades of life, about one fifth in the third decade, and more than one third in the fourth decade, or about 57 per cent under the age of 40 years. About one third are represented in the two decade age periods of 40 to 60 years, and relatively few after 60 years of age. Drug addiction is therefore represented in each age period above 15 years, but with a greater concentration in the 25 to 45 year age groups.

These observations apparently indicate that addiction to the use of habit-forming narcotic drugs is widespread throughout the United States; that all classes and groups of the general population are affected in one way or another; that occupation, periods of life, nativity, sex, color, marital or educational status, are not exempting factors. It appears that drug addiction is somewhat like an endemic disease, for it is through and on the people. If this is true, drug addiction constitutes a medicosocial problem of concern and importance to local jurisdictions, to the state and to the nation. Although federal agencies are charged in law with certain functions respecting this medicosocial problem, it is nevertheless of sufficient importance to enlist the interests, activities and support of local and state governments; of local, state and national associations, and of official and nonofficial agencies and organizations to the end that a coordinate attack may serve in its solution.

The economic loss to communities caused by drug addiction should be of interest to the legislator, business interests, and the practical administrator of public affairs. An intangible but important aspect of the problem is the economic loss through addiction in the prime of life, and the suffering and depredation of individuals whose families are not infrequently impoverished thereby.

It is impossible to determine the exact number of narcotic drug addicts in the United States. Various estimates have been made, however, based on a variety of factors, and approached in different ways. A comprehensive publication appeared in 1924 by Kolb and DuMez, wherein previous estimates and surveys were reviewed and an estimate of the number of drug addicts calculated on the theoretical possible quantity of drugs available to satisfy the craving of addiction. Their estimate places the number as not greater than 150,000. These authors consider that probably the more accurate and correct estimate would be near 110,000.

Other estimates have been made, based on first hand contact with the problems of narcotic law enforcement. The number of narcotic addicts compiled from that source is estimated by the Bureau of Narcotics, of the Treasury Department, as not to exceed 100,000. Terry estimates that there are at least 90,000, based on an analysis of the legal distribution of drugs in Detroit. Other estimates have been made also which are not based on any standard bodies of observations.

It is highly probable, based on knowledge available, that there is not more than one narcotic drug addict to each thousand of the general population of the United States. Any estimate in excess of two per thousand of the general population may be considered, in the light of present knowledge, as an exaggeration. However, it is not so important to determine the exact number of narcotic drug addicts in a country as it is to determine the extent to which addiction affects the various groups or components of the population, and whether or not it constitutes a medicosocial problem demanding solution.

THE CAUSES OF ADDICTION

Ease of access to habit-forming narcotic drugs must be considered an important causative factor in addiction. The more important precipitating or immediate causes of addiction, however, are related to the previous uses of such drugs in medical treatment, to self treatment for the relief of pain, to recourse to drugs during emotional distress, to the influence and association with others who are habituated to their uses, to overcome drunkenness, and to indulgence for the sake of experience, curiosity, a thrill or bravado.

The more important predisposing or underlying causes of addiction are related to the inherent constitutional make-up of the individual. The nervously unstable person is more prone to embrace the habitual use of narcotic drugs than one with a stable constitution. This is one way of saying that those with mild psychic disorders, or those of faulty personal constitution or mental make-up, constitute a variable proportion of addicts. An approach to the partial solution of narcotic drug addiction must therefore take into account the mental hygiene factors involved.

Drug addiction, like chronic alcoholism, becomes established at a much earlier age than is ordinarily supposed. It is usually established at a later period in life among those who handle drugs professionally or legally than among those unauthorized to handle narcotic drugs for professional or business reasons. In every hundred addicts authorized to deal in drugs, approximately four become addicts before 25 years of age, seventeen before 30 years, and forty-seven, or less than half, before 40 years of age. Among addicts unauthorized or unregistered to handle narcotic drugs for professional or business reasons, almost half acquire the habit before 25 years of age, and two thirds before 30 years of age.

The causative factors of addiction are found to be different in degree when comparison is made between those unauthorized to deal legally in narcotic drugs and those authorized to handle them. Among addicts licensed to deal in narcotic drugs for professional or business reasons, and who are accessible for study and observation, more than three fourths attribute their addiction to the previous use of these drugs in medical treatment or to self treatment for the relief of pain. Relatively few attribute their addiction to contact and association with other addicts, to a desire for experience, to satisfy curiosity, to obtain a thrill, or to their use during emotional distress. Among the unregistered group, almost half attribute their addiction to contact and association with other addicts. A proportion attribute their addiction to a desire for experience or bravado, to satisfy curiosity, to obtain a thrill, to allay emotional distress, or to overcome drunkenness. A proportion, however, attribute their addiction to the previous use of drugs in medical treatment and to self administration for the relief of pain.

PREVENTION OF ADDICTION

The enforcement of restrictive measures imposed by law, governing the importation, manufacture and distribution of narcotic drugs, bears a relation to prevention, since ease of access to such drugs is an associated causative factor of addiction. The first of these laws dealt more especially with safeguards surrounding the sale and distribution of drugs in an effort to limit their abusive uses. These local efforts, which are by no means uniform, eventually became crystallized into a federal measure for controlling commerce in narcotics. Inadequacies in these measures soon became apparent, and further elaboration in control was necessary, until in the United States today all manufacturers, dealers, pharmacists, physicians, dentists and veterinarians must be registered to deal legally in such drugs for professional or business reasons. A complete recording system is maintained of all imports, manufacture, sales and exports of these drugs.

But these measures for domestic control have been inadequate to meet the situation, since large quantities of habit-forming narcotic drugs are smuggled into the country each year. These supplies have their sources usually in countries where drugs are manufactured in excess of the medicinal and scientific needs.

The United States can be protected against this avalanche of contraband by an international agreement for limiting the world manufacture of narcotic drugs to the amounts required for medicinal and scientific purposes. The provisions of the Geneva Convention of 1931, to which the United States government is a signatory power, is intended to accomplish this purpose and further to control the movement of such drugs in international trade. The convention or treaty of 1931, if honestly and faithfully enforced by all countries, together with the existing measures for domestic control, should play an important rôle in the solution of the drug addiction problem in this country. The treaty was ratified by the United States Senate on March 31, 1932.

But restrictive laws governing the commerce in narcotics are not the only measures to be applied in the solution of this medicosocial problem. So long as there are drug addicts within the country, and so long as addicts are made through contact with other addicts, whose every motive and interest is centered on obtaining and maintaining a supply of drugs, there will be depraved men and women to supply them from any source or sources humanly possible. The need for destroying drug peddling is obvious, but the potential market for contraband must not be neglected.

The isolation and segregation of drug addicts with the object of treatment instead of punishment appears desirable and necessary, for their presence and contact with others in American communities is a potential danger and a causative factor in the production of further addiction. Their segregation and isolation should be for an indeterminate period, contingent on the individual concerned in somewhat the same way as the insane are segregated. A significant change in federal policy toward this phase of the drug problem occurred in 1929, when Congress authorized two institutions for the segregation and confinement of persons addicted to the use of habit-forming narcotic drugs who have committed offenses against the United States, including federal court, court martial, and consular court cases, for those placed on probation by such courts, and for those who may voluntarily seek treatment.

The control and management of these institutions is vested in the United States Public Health Service through a newly created Division of Mental Hygiene in the Office of the Surgeon General. One of these institutions is now being built near Lexington, Ky., designed to accommodate a thousand or more inmates, and the other has been located in the vicinity of Fort Worth, Texas. The objects, purposes and designs of these institutions are to rehabilitate, restore to health, and train to be self supporting and self reliant those who are admitted. In addition, the control, management and discipline is to be maintained for the safe keeping of the individual and the protection of the community. Industries are to be established to afford occupation, vocational training and education for inmates. Experiments are to be carried on to determine the best methods of treatment and research in this field, and the results disseminated to the medical profession and the general public to the end that states may make some provision and establish a public policy for helping to solve the problem of drug addiction. The functions of these institutions assume the character of a treatment and research center, of an educational, industrial, vocational and rehabilitation center with certain custodial features superimposed. These institutional provisions make an appeal to the humane instinct and may play an important rôle in the prevention of addiction. Nevertheless, other educational factors should not be neglected.

Studies of the quantities of narcotic drugs legally distributed to retailers and dispensers in various sections of the United States indicate wide variations in the per capita requirements of the general population. Great diversity of needs is also observed in different parts of the same communities. The diversified per capita requirements for narcotic drugs for medical purposes in the several communities of the United States, and in the same communities at different times, involve a wide variety of factors, none the least of which concern the choice of the individual practitioner. Investigations, however, have revealed that narcotic drugs are prescribed when indispensable and when no substitutes are available or can be employed. They are also prescribed inadvisedly, perhaps, and contrary to pharmacologic facts and opinions, which are so valuable to the general practitioner. They are unfortunately prescribed, in some instances, for the mere satisfying of addiction. It has already been pointed out that addiction is more readily induced in some persons than in others, one important predisposing or underlying cause being an inherent mental or nervous instability. Since it is known that addiction may be induced by the injudicious use of drugs in persons apparently free from any mental or nervous instability, then it is necessary that greater care must be exercised in their administration to avert this result in the unstable.

It is possible that the abuses of narcotic drugs may be avoided or prevented by giving consideration to the possibility of substituting non-habit-forming drugs whenever possible. When the use of habit-forming drugs is essential, however, care should be taken not to give larger or more frequent doses than are necessary to achieve the desired end. Patients requiring daily administration of habit-forming drugs should be seen often by the practitioner, and the amount of drugs ordered or supplied should not exceed that required by the patient until seen again. Administration on the part of nurses should be limited to prescription, and changes in treatment should be in writing. Patients should not be informed of the name or dose of the drugs administered, and hypodermic administrations should be avoided if possible, and never self administered. The use of the drug should be discontinued immediately when no longer required; and if a craving has resulted, close supervision and appropriate treatment should be maintained until the patient has been rendered independent of the drug.

Valuable results in the judicious use of narcotic habit-forming drugs might be obtained through the medium of instruction to professional students and to practitioners, and through the medium of an authoritative memorandum for guidance in this difficult and important problem. This phase of the problem has been approached through the medium of the American Medical Association. The Journal has published a series of articles on the indispensable uses of narcotic drugs. These articles were prepared by various authors and are now available in book form. The publication has been issued in cooperation with the Committee on Drug Addiction of the Division of Medical Science of the National Research Council and the Division of Mental Hygiene of the United States Public Health Service, and made possible through contributions by the Bureau of Social Hygiene.

Experience has shown that some practitioners order for or supply narcotic drugs to individuals simply to enable those addicted to satisfy their craving, or the circumstances of supply are of such a character as to cast doubt on the method and intent as being bona fide medical treatment. Quantities of drugs have been prescribed over long periods of time for persons seen at long intervals or not seen at all; drugs have been sent by post for some alleged urgent need or have been obtained concurrently from two or more practitioners. In some instances, large quantities of drugs have been purchased or supplied practitioners and used for administration to themselves. It is evident that narcotic drugs have been supplied and used without the necessity for medical treatment and in contravention of the intent of the law.

International treaties and the laws of the land have rightfully made certain professional groups the custodians of these dangerous narcotic drugs. Thinking people of this and other countries believe they have not misplaced this trust, and they expect these drugs to be used for bona fide medical and scientific purposes. The abusive uses of these dangerous drugs and the violations of this trust are problems to be dealt with, corrected and prevented by the concerted actions of representative organizations and leaders among these professional groups in cooperation with law enforcement agencies having responsibilities in the matter.

The problem of drug addiction demands that further research studies and investigations be made, and the results applied in its solution and in the prevention of addiction. The Committee on Drug Addiction of the Division of Medical Science of the National Research Council, supported by the Bureau of Social Hygiene in cooperation with the Bureau of Narcotics of the Treasury Department and the United States Public Health Service, two federal governmental agencies most concerned with this problem, has inaugurated certain fundamental research activities in this field.

These research studies are of a chemical and biologic character. The first relates to the chemistry of the opium alkaloids, the activity being carried on at the Cobb Chemical Laboratory at the University of Virginia with a view to finding a preparation derived from opium, having all the qualities of a narcotic drug but without addiction properties. The discovery of such a substance would go far toward the prevention of drug addiction. The second, or biologic, studies have reference to the pharmacologic action of these preparations with the object of determining their toxicity and physiologic properties on lower animals. These studies are being carried on in the Department of Pharmacology at the University of Michigan Medical School. Further clinical investigations as to the value of these substances in man are being inaugurated by the Public Health Service incident to the supervising and furnishing of the medical services in federal penal and correctional institutions, and to the establishment of the United States narcotic farms. Progress reports of these studies and investigations are being published from time to time.

The present status of knowledge concerning the nature of drug addiction leaves much to be desired. The phenomena of drug tolerance and addiction, the disturbances in water, lipoid and carbohydrate metabolism, the dysfunction of the endocrine and vegetative nervous systems, the effects of these drugs on the mind, and the euphoria experienced from the continuous use of opium or its derivatives are all subjects on which great diversities of opinion exist. They demand further coordinate research for their solution. The exact nature of narcotic drug addiction will be better understood through a [illegible] biochemical, psychobiologic and [illegible]

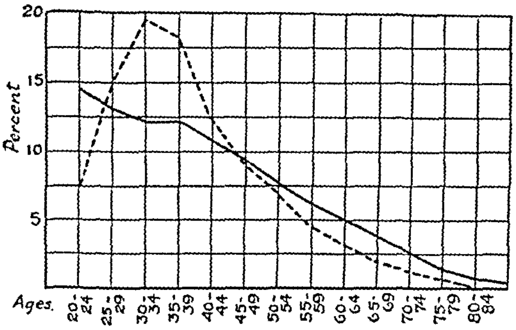

Fig. 1.—Comparison of ages of drug addicts of the United States with age distribution of general population (drug addicts coming within the purview of the law during the period July 1, 1929, to June 30, 1930, compared with age distribution of general population according to U. S. Census of 1930): solid line, population; broken line, all addicts.

The necessity of prolonged or life-long administration of narcotic drugs is not universally held in this country. The fact that it is held by some individuals makes it difficult to assume that the continuous administration in nondiminishing doses is necessarily inconsistent with ethical medical treatment. It is apparent that this phase of the subject is much confused with and involved in the much broader question of ambulant versus institutional treatment of drug addiction. In the United States the ambulatory treatment of drug addiction, while theoretically possible, has been condemned as impracticable by the majority of medical opinion. According to the modern conception, crystallized in socially and legally sanctioned laws, drug addicts or persons requiring continuous and nondiminishing doses of opium or its derivatives are unpopular and regarded as a menace to the social order. They appear to constitute a medicosocial problem demanding institutional segregation and treatment. There is, however, no treatment for drug addiction from the standpoint of specific cure that will miraculously operate to rid drug addicts of their addiction.

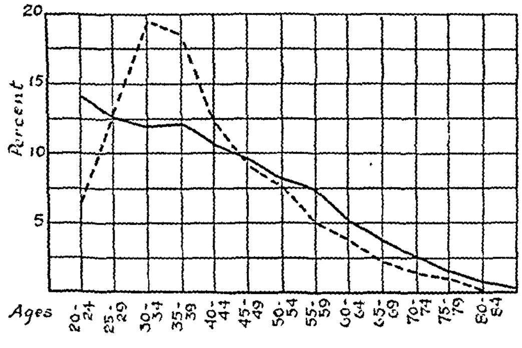

Fig. 2.—Comparison of ages of male drug addicts of United States with age distribution of general population (male drug addicts coming within the purview of the law during the period July, 1929, to June 30, 1930, compared with age distribution of general population according to U. S. Census of 1930): solid line, population; broken line, male addicts.

The treatment of drug addiction automatically divides itself into three phases, involving, first, the detoxication or physical rehabilitation stage; second, the emotional stabilization and reeducational phase, and, third, the social placement and community supervision phase.

The problem of institutional treatment, however, must take into account the diverse motives or underlying reasons for seeking treatment, the incidence of intercurrent diseases and defects in such a group, the great differences in the types of personalities involved, and the need for protecting the institutional community against the weaknesses and cupidity of its component individuals.

There are, of course, some persons addicted to the use of habit-forming drugs who sincerely desire to throw off the so-called slavery of the drug, but this sincerity vanishes when withdrawal symptoms appear. There are those who seek treatment through coercion by friends or relatives, the individual having little sincerity or desire to throw off the habit. Then, too, there are those who seek treatment because of their desire to impress the court or court official. Others seek treatment because an institution offers a convenient refuge from the police, because of a desire to reduce the daily dose of the drug, thus lessening the expense of maintaining themselves in a future daily supply, and still others because of their need for maintenance and support.

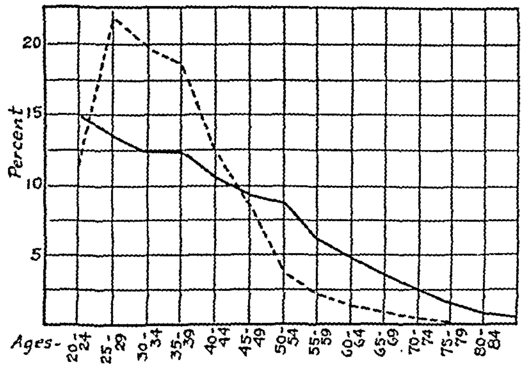

Fig. 3.—Comparison of ages of female drug addicts of United States with age distribution of general population (female drug addicts coming within the purview of the law during the period July 1, 1929, to June 30, 1930, compared with age distribution of general population according to U. S. Census of 1930): solid line, population; broken line, female addicts.

The intercurrent diseases observed among these people embrace the whole category of medicine, and their needs involve provision for the ambulant, semiambulant, bedridden, and convalescent sick. The diverse personalities involved point to the need for appropriate classification and groupings as a necessary corollary to treatment, based on first-hand knowledge of the antecedent, social, educational, industrial and economic background, together with an analysis of the character traits of the individual. The appropriate classification and grouping of these people within an institution is important for rehabilitation purposes and for the safety and protection of the institutional community and the community at large.

THE CHARTS

Figure 1 shows the proportional distribution of ages of addicts in five-year groups. The solid line shows the proportional distribution of ages 20 and over in the general population; the broken line shows the corresponding age distribution of addicts. It is to be seen that in ages 20 to 24 the proportional representation of addicts is less than that of the general population of the same age; in ages 25 to 40, the proportional representation of addicts is greater, being approximately 3 to 2 as compared with that of the general population. The proportion of addicts over 45 years of age is, on the other hand, less than the proportion of persons over 45 years of age in the general population.

Figure 2 shows the proportional distribution of ages of male addicts in five-year groups. The solid line indicates the proportional distribution of males of various ages in the general population, and the broken line, the proportional distribution of ages of male addicts. It is to be noted again that there is a deficiency in the proportion of addicts in ages 20 to 24, an excess in ages 25 to 40, and a proportional deficiency in ages 45 and over.

Figure 3 shows the proportional distribution of ages of female addicts in five-year groups. Corresponding with the former graphs, the solid line indicates the age distribution of females in the general population, and the broken line, the age distribution of females who are addicted to the use of narcotic drugs. The distribution is essentially the same as in the case of the males; that is, a proportional deficiency in the years 20 to 24, an excess in the years 25 to 40, and a deficiency in ages over 45.

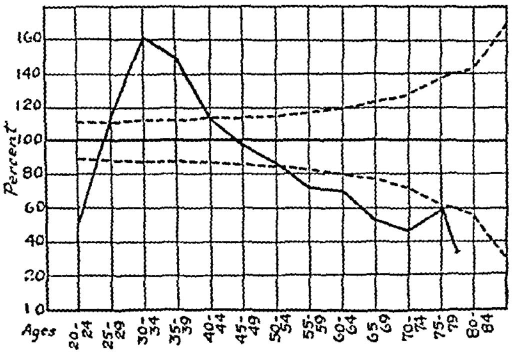

Fig. 4.—Deviation of ages of addicts from expectancy (the excess and deficiency of addicts in different age groups as compared with the general population; drug addicts coming within the purview of the law during the period July 1, 1929, to June 30, 1930); broken line, number of people in different age groups used as the base; solid line, index of the number of addicts in different age groups; ± 3 (S. D.) the odds are about 1 to 400 that the excess or deficiency of the number of addicts cannot be due to chance when it falls outside the broken line zone.

Figure 4 shows the age distribution of addicts of both sexes as compared with the age distribution of the general population used as the base, the 100 per cent line. The zone included in the broken lines may be considered as the zone of probability; deviations beyond this zone cannot be attributed to chance, the odds being approximately 1 against 400. It is to be noted, therefore, that the deficiency below 24, the excess between ages 25 and 40, and the deficiency of the proportion of addicts after the age of 45 are statistically significant.

Figure 5 shows the distribution of medicinal opium sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that thirty-one states have an annual opium consumption of less than $\frac{3}{10}$ grain per capita; fifteen states have an opium consumption of from $\frac{3}{10}$ to $\frac{6}{10}$ grain; two states have a per capita consumption of from $\frac{9}{10}$ to $1\frac{2}{10}$ grains, and in one state the annual consumption of opium, as shown by our sample, exceeds $1\frac{2}{10}$ grains per capita. This wide variation in the per capita consumption of opium in the different states indicates that certain states are using an excessive amount of this drug.

Figure 6 shows the distribution of morphine sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that two states have an annual consumption of morphine of less than $\frac{14}{100}$ grain per capita; seventeen states have a consumption of from $\frac{14}{100}$ to $\frac{28}{100}$ grain; fourteen states a consumption of from $\frac{28}{100}$ to $\frac{42}{100}$ grain; ten states a consumption of from $\frac{42}{100}$ to $\frac{56}{100}$ grain, and in six states the annual consumption of morphine, as indicated by our sample, exceeds $\frac{56}{100}$ grain per capita. There is again a wide variation in the per capita consumption of morphine in the different states, indicating an excessive use of morphine by certain states.

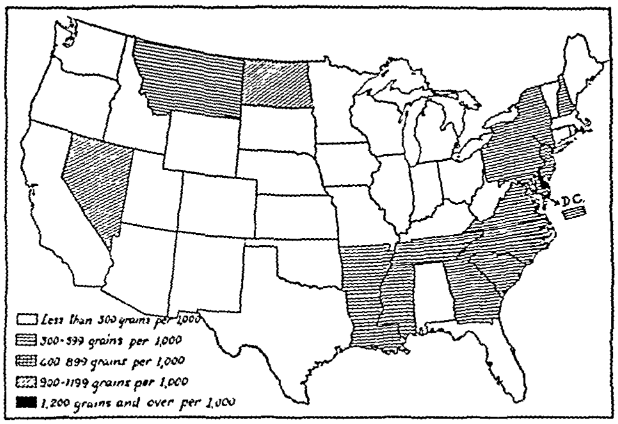
D.C.
Less than 300 grains per 1,000
300-599 grains per 1,000
600 899 grains per 1,000
900-1199 grains per 1,000
1,200 grains and over per 1,000

Fig. 5.—Distribution of medicinal opium to licensed retailers and dispensers (grains per thousand of population).

Figure 7 shows the distribution of codeine sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that twenty-three states have an annual consumption of codeine of less than $\frac{36}{100}$ grain per capita; twenty-four states have a consumption of from $\frac{36}{100}$ to $\frac{72}{100}$ grain; one state a consumption of from $1\frac{1}{10}$ to $1\frac{44}{100}$, and in one state the annual consumption of codeine, as indicated by our sample, exceeds $1\frac{44}{100}$ grains per capita.

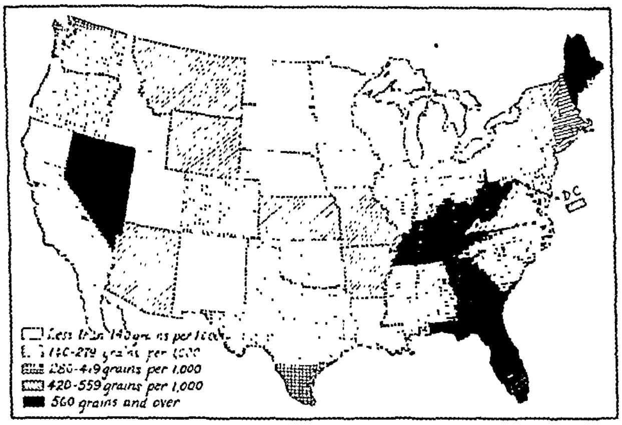

Fig. 6.—Distribution of morphine to licensed retailers and dispensers (grains per thousand of population).

The same wide variation in the per capita consumption is present in codeine as in other narcotic drugs.

Figure 8 shows the distribution of cocaine sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that thirty-five states have an annual consumption of cocaine of less than $^{14}/_{100}$ grain per capita; nine states have a consumption of from $^{14}/_{100}$ to $^{28}/_{100}$ grain; three states have a consumption of from $^{28}/_{100}$ to $^{42}/_{100}$ grain; one state has a consumption of from $^{42}/_{100}$ to $^{56}/_{100}$ grain, and in one state the annual consumption of cocaine, as indicated by our sample, exceeds $^{56}/_{100}$ grain per capita. This wide variation in the per capita consumption of cocaine in the different states indicates that certain states are using an excessive amount of this drug.

The last map of this series gives a picture of the comparative consumption of morphine and codeine sold to licensed retailers in the different states by manufacturers and wholesalers in 1930. From an *a priori* consideration, it is to be expected that the consumption of codeine is a substitute to more dangerous narcotic drugs. The comparison, however, shows that, in general, states with a high consumption of morphine usually have a higher consumption of codeine, and vice versa. In twelve states the consumption of both morphine and codeine is below the average; in fifteen states the consumption is about average in both drugs, and in nine states there is an excessive consumption of both drugs. This indicates that in thirty-six states there is a parallelism between the consumption of morphine and that of codeine. In the remaining thirteen states the association is reversed; in seven states the morphine consumption is in excess while codeine consumption is less than average, and in six other states the codeine consumption is in excess of the average and that of morphine less than average.

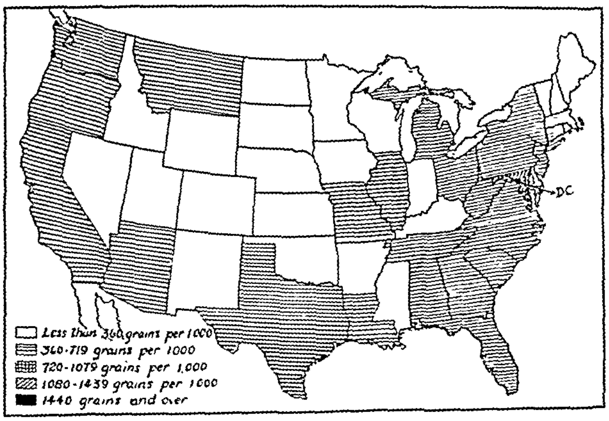
DC
Less than 360 grains per 1000
360-719 grains per 1000
720-1079 grains per 1,000
1080-1439 grains per 1000
1440 grains and over

Fig. 7.—Distribution of codeine to licensed retailers and dispensers (grains per thousand of population).

CONCLUSION

This paper briefly deals with an epidemiologic approach to the drug addiction situation in the United States; it points out that it is a medicosocial problem of interest and concern to local, state and national jurisdictions, organizations and associations; that a public policy which treats drug addiction solely as a penal and correctional problem is not contributing to its solution; that immediate and remote causes of drug addiction bear a relation to the measures adopted for its prevention in the past, the present, and those pending and contemplated; that measures for prevention demand the full cooperation and counsel of organized agencies representing the professional groups concerned, with law enforcement agencies having responsibilities in the matter; that prevention and treatment necessitate an appreciation of the psychobiologic, chemicobiologic and pharmacobiologic factors involved, and that fundamental research is essential for the establishment of more accurate knowledge concerning the chemistry of alkaloids, of more reliable information respecting their biologic effects in lower animals and in man, and of a more satisfactory evaluation of the many psychobiologic factors intergrading delinquency. Basic facts on these subjects may not be established this year or the next, but systematic and scientific studies by technically trained groups of workers should pave the way to a better understanding of this and related problems.

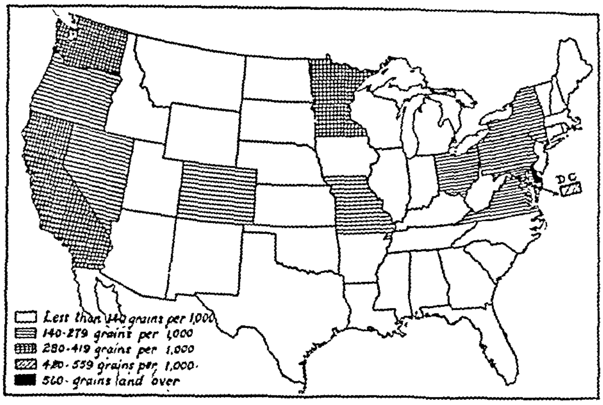

Fig. 8.—Distribution of cocaine to licensed retailers and dispensers (grains per thousand of population).

Unfurling the banner of medicine over the drug addiction situation in the United States is made possible through legislative act. This may be interpreted as a sign of the times, and an expression, first, of dissatisfaction with previous public policies that offered no solution to the problem, and, secondly, of the need for a more fundamental biologic approach. This legislation is all the more expressive when it is appreciated that for the first time in history a general public is showing a wider interest in disorders of the mind and is beginning to interpret social failures, unconventional beha-

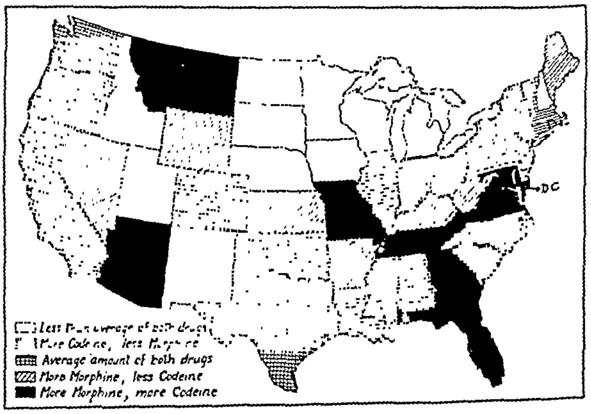
DC
Less than average of both drugs
More Codeine, less Morphine
Average amount of both drugs
More Morphine, less Codeine
More Morphine, more Codeine

Fig. 9.—Comparative distribution of morphine and codeine to licensed retailers and dispensers (grains per thousand of population).

vior, and conduct in terms of personality factors having behind them mental, or, more technically, psychobiologic implications. These biologic interpretations, made by an interested public, have been crystallized into the law of the land as affecting the drug addiction problem.

But the general public is also recognizing that public policies of the future, dealing with groups of the population unable to comply with the standards of behavior and conduct maintained by society, must take into account those biologic factors, such as individual antecedent history and heredity, experience and education, and physical and mental status, that may bear on the deviation of a personality in a pathologic or unsocial direction. Then, too, it is being generally recognized that community sources of warped and distorted personalities must be uprooted; that such personalities must have early and adequate treatment best suited for the individual and for the safety and protection of the community; that underlying causes of these biologic misfits must be sought by study and investigation, and that means must be adopted to render less threatening the menace of increase in their number.

Whereas recent legislation requires that the solution of the narcotic drug addiction problem shall be largely a federal activity embracing administrative, investigative and research functions, nevertheless its medicosocial and biologic significance becomes more crystallized when these functions are imposed on the medical profession. It may be significant, therefore, that the United States Public Health Service has been designated ex officio, unsought as it were, the coordinator for carrying out those research functions relating to the eventual solution of the problem.

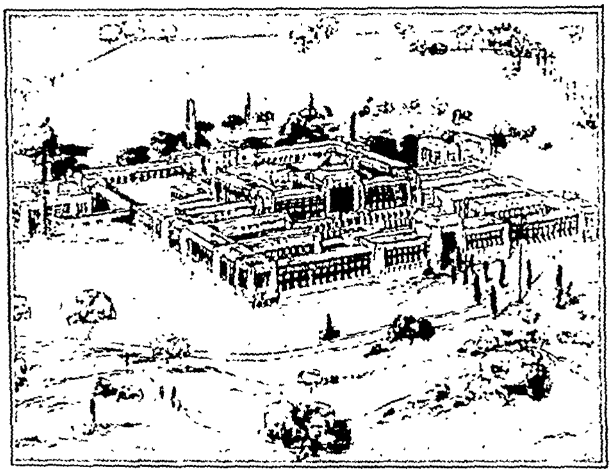

Fig. 10.—The first United States narcotic farm, at Lexington, Ky.

In concluding this discussion of drug addiction and measures for its prevention in the United States, attention should be called to some experiences of the past. These teach us that depraved men and women are eager and ready to raid those supplies destined for medical and scientific uses when contraband narcotic drugs are not available or are unusually difficult to procure. They will seek every means to divert such supplies from legitimate channels. The adoption of a public policy of segregating, isolating and treating drug addicts as a means of solving this potential menace to the legal supply of dangerous habit-forming narcotic drugs should serve to safeguard the interests of those professional and business groups who are custodians of these drugs.

FOCAL ENLARGEMENT OF THE TEMPORAL BONE AS A SIGN OF BRAIN TUMOR

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PHILADELPHIA

Bony thickening or hyperostosis overlying tumors of meningeal origin in some parts of the skull has within recent years gained a secure foothold in cerebral pathology. Spiller,[1] Cushing,[2] Penfield,[3] Winkleman[4] and others have contributed to our knowledge of its occurrence and characteristics. It is a slowly growing, hard prominence of uncertain nature, believed by some to be secondary to invasion of the skull by the intracranial tumor accompanied by bone formation. Spiller[5] stated that he was of the opinion that hyperostosis of the cranium immediately above a fibroblastoma may not invariably be produced by infiltration of tumor cells.

My object in this paper is to record and discuss two instances of external prominence of the squamous portion of the temporal bone in children, directly overlying an intracranial tumor and not due to hyperostosis but to bulging. In each, the occurrence was sufficiently early to furnish the principal evidence of the presence and localization of the growth, a meningeal fibroblastoma in one and a glioma in the other.

REPORT OF CASES

Case 1.—*Bulging of the squamous portion of the right temporal bone directly overlying a meningeal fibroblastoma.*

History.—A girl, aged 10 years, admitted to the service of Dr. William G. Spiller in the University of Pennsylvania Hospital, Dec. 12, 1931, had had attacks of headache and vomiting just prior to Dec. 10, 1930, on which date Dr. J. H. Dewey of Trenton, N. J., made an examination and found a convergent strabismus, vision five fifths in each eye, and a marked bilateral optic neuritis. Dec. 18, 1930, the eyes were parallel, with no signs of muscular weakness, and the optic neuritis was much less marked in degree. December 31, the neuritis was again noticed to be subsiding. Jan. 3, 1931, she was sent to Dr. Spiller, who recommended admission and further study in the University of Pennsylvania Hospital. The child refused to stay and her father decided to take her home. The family stated that since this time she seemed to be perfectly well until two weeks before admission, when she complained of being unable to see in the right eye. She was again sent to Dr. Spiller. On the day before admission the mother, while washing the girl's head, noticed for the first time a hard lump just above the right ear.

Examination.—At the time of admission, examination by Dr. Spiller revealed weakness of the left side of the face of the upper neuron type; deviation of the tongue to the left on protrusion, and to the right when resting within the mouth; a very mild degree of paresis of the left extremities, and a somewhat exaggerated left patellar reflex. No disturbance of sensation could be detected. Tone and synergy throughout the musculature were normal.

A decided bulge was noted in an area 3 cm. in diameter of the squamous portion of the right temporal bone just above the ear.

Read before the Philadelphia Neurological Society, Feb. 26, 1932.
From the Neurological Department of the University of Pennsylvania.

[1] Spiller, W. G.: Hemicraniosis and Cure of Brain Tumor by Operation, J. A. M. A. **49:** 2059 (Dec. 21) 1907.

[2] Cushing, Harvey: Cranial Hyperostosis Produced by Meningeal Endotheliomas, Arch. Neurol. & Psychiat. **8:** 139 (Aug.) 1922.

[3] Penfield, W. G.: Cranial and Intracranial Endotheliomata, Hemicraniosis, Surg., Gynec. & Obst. **36:** 657 (May) 1923.

[4] Winkleman, N. W.: Hyperostosis and Tumor Infiltration of Base of Skull Associated with Overlying Meningeal Fibroblastoma, Arch. Neurol. & Psychiat. **23:** 494 (March) 1930.

[5] Spiller, W. G.: Cranial Hyperostosis Associated with Underlying Meningeal Fibroblastoma, Arch. Neurol. & Psychiat. **21:** 637 (March) 1929.

Ophthalmologic examination showed a choking in each disk of 3 diopters with no hemorrhage or exudates, and a definite left homonymous hemianopia.

Roentgen examinations were made by the staff of Dr. Henry K. Pancoast and interpreted by him. The examinations of December 14, 16 and 17 showed moderate convolutional atrophy and increased prominence of the coronal suture. There was a doubtful atrophy over the top of the dorsum sellae. A metasellar lesion was suggested as the cause. A thinning and bulging of the bone in the right temporoparietal region was demonstrated by a tangential view and a moth-eaten appearance in this region by lateral stereoscopic views. In the tangential view the tables could not be made out and for this reason a separate tumor of the bone was thought of. Because of the difference between the roentgen localization of a metasellar lesion and the clinical one of a temporal lobe tumor, a ventriculographic examination was advised.

A ventriculographic examination was made, December 22, by Dr. Reed Harrow in the service of Dr. Charles H. Frazier. Dr. Pancoast stated that the sagittal view showed no filling of the right lateral ventricle or the third ventricle. The anterior horn and body of the left ventricle were displaced to the left. The lateral view showed a fairly normal left lateral ventricle, with no filling defect and little, if any, dilatation. The third ventricle, aqueduct and fourth ventricle could not be visualized. The right lateral view showed no interchange of air into the right lateral ventricle, indicating a block at the foramen of Munro. A block in the third ventricle would have caused dilatation of the left lateral ventricle. His conclusions were that there was a large mass lesion in the right side in the temporoparietal region.

Operation.—Dr. Charles H. Frazier, on operating, found the bone to be very thin at the location of the bulge, so thin that by its pressure alone the drill penetrated the skull and dura. Beneath and adherent to it, a large extradural growth was located and removed.

The gross specimen was examined by Dr. William Duane, Jr., who found that it consisted of some large and small pieces of tumor, dura, cyst wall and an operative bone flap. The bone flap, weighing 17 Gm. and measuring 5 by 11 cm., was extremely thin, light and translucent.

The pathologic diagnosis of the tumor by Dr. Bernard J. Alpers was that it was a malignant type of fibroblastoma.

On microscopic examination of the bone flap, Dr. Bernard J. Alpers found that the bone overlying the tumor showed a marked infiltration of tumor cells. There was much bone destruction but no evidence of bone formation.

CASE 2.—*Bulging of the squamous portion of the right temporal bone directly overlying a glioma; less marked bulging of the squamous portion of the left temporal bone.*

History.—A girl, aged 9 years, admitted to the service of Dr. William G. Spiller in the University of Pennsylvania Hospital, Aug. 12, 1929, complained of general convulsions with aurae of ringing and roaring in both ears and headaches for a period of two years. There was nothing in the seizures of localizing value excepting possibly the auditory character of the aurae. They occurred rather frequently at intervals of from one to four days. She did not fall because the aurae were sufficiently early and constant to afford protection. Large doses of phenobarbital were necessary to give relief. The headaches were severe, frequent, and confined to the frontal region.

Examination.—The patient was of average intelligence and presented no departure from the normal in a physical examination with the following exception: In the area of the squamous portion of the right temporal bone just above the zygoma and external auditory meatus and a little anterior to the ear, a swelling was noted. It was firm, smooth and not tender, and blended off imperceptibly into the surrounding areas. It was about three fingerbreadths wide and about 1 cm. high at its highest point. This slight enlargement had been noticed for one year by the family physician and seemed to him to be slowly becoming more prominent. One week after admission a slight painless swelling was noticed in the squamous portion of the opposite temporal bone, 1½ inches above the external auditory meatus and one-half inch in diameter.

These swellings in the squamous areas were believed to be due to bulging as a result of increased intracranial pressure.

A roentgen examination, July 24, 1929, was interpreted by Dr. Henry K. Pancoast as showing convolutional atrophy, most marked in the frontoparietal region, widening of the coronal suture, no sellar changes, and some calcification in the region of the right middle fossa. There was some bulging and thinning of the bone in the right temporoparietal region. The next examination, August 22, confirmed the calcification, showed no sellar changes, and displayed the bulging. A further study, Jan. 30, 1930, showed the swelling on the right side to be slightly greater. There was beginning slight atrophy of the dorsum. The convolutional atrophy had increased and the coronal suture was more prominent.

Ophthalmologic examination, February 2, showed 5 diopters of choking in each eye.

Ventriculographic examination, made by Dr. W. G. Gardner in Dr. Frazier's service, February 14, was thus read by Dr. Pancoast: In the anterior view there was air in each lateral ventricle, but both, with the midline structures, were displaced decidedly to the left. Visualization of the third ventricle in this view was uncertain. In addition there was a large collection of air, presumably in a cyst, over the right side, well lateral to the lateral ventricle. In the lateral views only the cyst was represented by air in the right ventriculogram. Evidently the left ventricle was the only one tapped and air in the right entered from the left by way of the foramen of Munro. Air in the cyst was present evidently from direct tap.

Operation by Dr. Charles H. Frazier, February 14, revealed a gliomatous cyst at the base of the right temporal lobe pushing the lobe upward. It was evacuated and further tumor tissue removed until the white matter of the brain could be seen.

Examination of the bone flap was not made.

COMMENT

The skull cap is constructed to anticipate all normal contingencies in the development and protection of its contents; also to anticipate certain intracranial pressures and degrees of pulsation. It owes its success to manifold potential variabilities, based on shape, simplicity and plasticity of structure, delay in growth and in suture closures, location of the fontanels, process of individual bone growth, and other characteristics.

From the occasion of its venture through the birth canal to advanced age, its ingenious architecture lessens the dangers of injurious contacts. It is thickest and strongest where necessity most demands: from the vertex posteriorly to the foramen magnum, and from the vertex laterally by anterior and posterior buttresses. It is thinnest in the region of the squamous portion of the temporal bone, where plasticity and expansibility are most needed for the natural development of those areas of the cerebral hemispheres identified with powers of discrimination and acquired knowledge.

All the bones of the skull in early life are elastic and comparatively soft and yielding. If a blow is inflicted on the vault in a young child, the most usual effect, if the blow is not too sharp or too severe, as far as the bone is concerned, is an indenting or bulging rather than a fracture. Treves[6] cited illustrations of the yielding character of the young child's skull in the gross deformities of the head that certain Indian tribes produced in their offspring by applying tight bandages to the part in infancy. He stated that in the College of Surgeons museum there were many skulls of flat headed Indians that showed to what extreme this artificial deformity of the head may be carried. Guemot was referred to by Treves as asserting that much deformity of the head may be produced in infants by the practice of allowing them always to lie on one side of the body. Here the deforming agent is simply the weight of the head.

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[6] Treves, Frederick: Surgical Applied Anatomy, Philadelphia, Lea Brothers & Co., 1901.

Even in adults the skull is much less brittle than is commonly supposed, and notions as to the breaking ability of the cranial bones are apt to be erroneous.

Just as the cranial vault may be influenced by extracranial force, so it may be expected to be influenced by undue increase of intracranial force. Schüller[7] in particular has called attention to skull changes resulting from chronic excessive intracranial pressure, especially in the child. He stated that, if the pressure lasts a long period of time, as in chronic hydrocephalus, tumors, cysts, tubercles or gummas, it may cause by its pulsating character an extensive pressure erosion of the inner surface of the skull. He referred to one instance of circumscribed bulging and thinning of the cranial vault due to direct tumor pressure. There existed a palpable bulging of the squamous portion of the left temporal bone in a man, aged 32, who had a tumor in that region. The nature of the growth was not stated, but the roentgenogram showed that the skull wall was thinned and bulged out like a watch crystal. This is the only instance of circumscribed thinning and bulging due to direct tumor pressure that could be found in the literature, attention being called to it by Dr. Henry K. Pancoast. It is to be noted that the locality involved coincides with that of the two cases herein recorded; but also that the bulge occurred in a man, aged 32.

Sachs[8] has referred to the marked thinning of the bones of the skull from increased pressure occurring particularly in children, mostly the result of and associated with the internal hydrocephalus which usually accompanies a lesion in the posterior fossa.

It would appear that the cause or causes of the bony prominences in these two children were the result of localized and general intracranial pressure operating over a duration of time of unknown length. Also that this pressure exerted itself in areas in which the natural preparedness of the bone is not as great as in other portions.

In case 1 the tumor was of meningeal origin and had no buffer between it and the thin squama directly overlying, which according to roentgen and microscopic evidence was invaded by tumor cells and thereby increasingly weakened. The dura adherent to the bone pinioned the tumor to the skull vault and created a tendency to limit direct pressure outward and inward in the immediate neighborhood. Inward pressure on the optic radiation would account for the left homonymous hemianopia. Outward pressure would account for the thinning and bulging of the bone. Pressure internally and above in the direction of the internal capsule would account for the pyramidal tract symptoms. The growth probably slowly decompressed itself by a gradual formation of the lump. The absence of symptoms and the improvement in the optic neuritis one year before admission probably were due to the increased cranial capacity occasioned by the bulge, although the latter was not discovered until one day before admission.

In case 2 the tumor did not arise from the meninges. It was of deep origin and was shown by the ventriculogram to have shifted the lateral ventricles and midline structures to the left in the direction of the opposite squama. The total lack of observable neurologic changes may thereby be accounted for by the giving way of the right squama, and also by a slighter degree of bulging of the left squama, thus creating an enlarged intracranial capacity by an increase in the cranial diameter between the two squamae.

SUMMARY

1. Two instances of focal bulging in the squamous portion of the temporal bone, due to an underlying brain tumor, occurred in children, aged 9 and 10 years, and provided the principal localizing sign for diagnosis and operation.

2. One was due to a meningeal fibroblastoma; the other, to a glioma.

3. In each, cystic formation had occurred, no doubt indicating rapid development in size.

4. By displacement of midline structures, a milder degree of bulging in the opposite squama was produced by the glioma.

5. The bone flap immediately above the meningeal fibroblastoma was shown by microscopic examination to be invaded by tumor cells.

133 South Thirty-Sixth Street.

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[7] Schüller, Arthur: Roentgen Diagnosis of Diseases of the Head, translated by F. F. Stocking, St. Louis, C. V. Mosby Company, 1918.

[8] Sachs, Ernest: The Diagnosis and Treatment of Brain Tumors, St. Louis, C. V. Mosby Company, 1931.

Clinical Notes, Suggestions and New Instruments

CHANCRE OF THE MALE BREAST SIMULATING PAGET'S CANCER OF THE NIPPLE

JOHN G. MENVILLE, M.D., NEW ORLEANS

The incidence of primary syphilis in the human breast is relatively rare. Buckley[1] in 1894 reported that 12.5 per cent of the extragenital lesions occur in the breast. In 1897, Fournier[2] found that the percentage was 5.1 and that only 5 per cent of the lesions occurred in the male breast.

Syphilis of the breast may manifest itself in any of the three classic stages; namely, primary (chancre), secondary and tertiary (gumma) lesions. These entities are amply described by Gravagna,[3] Deaver and McFarland[4] and others.[5]

The rarity of the condition and the problem in diagnosis that this case presented prompted the following case report:

A white man, aged 72, presented himself at the clinic with a complaint of "sore nipple" on the left side. Six weeks previously (March 29, 1923) he had been injured at this site during sexual intercourse, in a house of ill fame. The family and the past history were essentially negative except for gonorrhea at the age of 26, complicated by orchitis of the right testicle. He had had repeated attacks of urethral discharge since that time. He was treated for chancroids twenty-seven years previously.

The patient was slightly obese and had an alcoholic facies. On admission, the pulse and temperature were normal. There was slight enlargement of the lymph nodes in the cervical and epitrochlear regions.

From the Surgical Pathological Laboratory, Department of Surgery, Johns Hopkins Hospital and University, Baltimore.

[1] Buckley: Syphilis in the Innocent (Syphilis Isonatium), New York, 1894.

[2] Fournier, J. A.: Extragenital Chancres, Paris, Rueff et Cie, 1897.

[3] Gravagna: Chancre on Nipple, Gums, Tongue, Due to Lactation: Cases, Arch. ital. di dermat., sif. **2:** 72-77 (Oct.) 1926; Sifilomi Primari della Mamelle; Sifilide da Allattaments, Boll. d. mal. ven. sif. e. d. Pelli., Rome **5:** 96, 1905, and Syphilis, Paris **3:** 588, 1905.

[4] Deaver, J. B., and McFarland, Joseph: The Breast: Its Anomalies, Its Diseases, and Their Treatment, Philadelphia, P. Blakiston's Son & Co., 1917.

[5] Ambrosoli: Di Una mallatia della Glande Mammaria, Gaz. Med. Clin. Ital., Lombardy, 1864. Barthelemy: Gommes syphilitique du sein, Bull. Soc. franç. de dermat. et syph. **7:** 38, 1896. Vennes, J.: Chancre multiple du sein, Montpellier méd. **20:** 549, 1905.

The right epididymis was moderately indurated. The right and left lobes of the prostate were firm and slightly enlarged. coughing produced a slight impulse in the right external inguinal rings and a small invisible hernia in the dilated left inguinal ring.

The left breast was slightly higher than the right. The distance from the suprasternal notch was 22 cm. to the left breast and 23.5 cm. to the right nipple. There was redness about the left nipple which extended slightly beyond the areola (fig. 1). Immediately around the left nipple were abundant excoriations which did not extend beyond 1 cm. on either side of the nipple. The nipple was almost hidden by an excoriating, exuding mass which was about 24 mm. in diameter. Toward the left axilla there was a slight skin abrasion which resulted from the application of adhesive plaster.

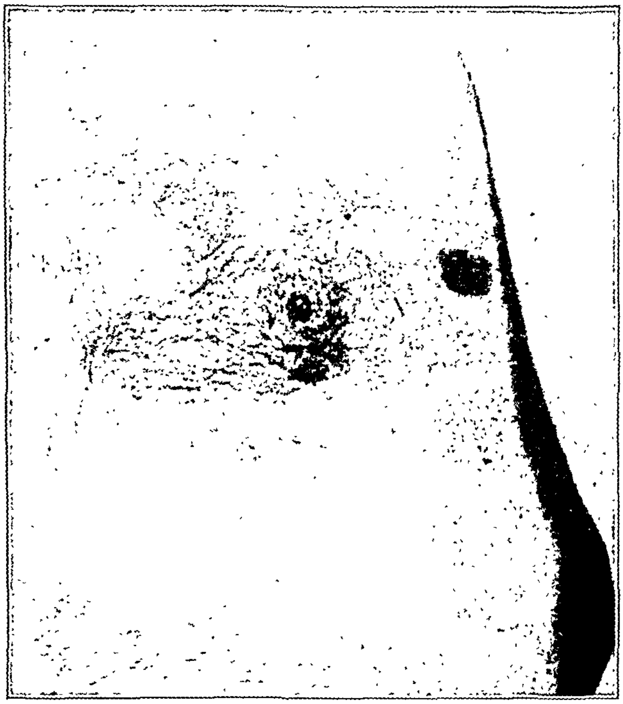

Fig. 1.—Chancre of a male breast showing the nipple surrounded by multiple excoriations.

Under the left pectoral muscle there was a nodule which was overhung by smaller masses in the left axilla.

Palpation of the left breast revealed a slightly tender and moderately indurated mass about the left nipple, extending 1.5 cm. to the outside of the nipple. Under firm pressure a clear, thin serum exuded from the excoriation. The mass beneath the pectoral muscle was firm, not tender, freely movable, and measured 1½ by 1 by 1 inches. The nodules in the left axilla were discrete, small, freely movable, not tender and varied from one-half to 1 inch in diameter. They were not as firm as the subpectoral mass.

Examination of the right breast was essentially negative.

The blood Wassermann reactions were negative. Urinalysis showed a cloudy urine with a trace of albumin and a few pus cells.

Roentgen examination revealed a generalized bronchitis and slight evidence of emphysema, but no evidence of metastases.

A diagnosis of Paget's disease was made and a radical amputation for carcinoma of the left breast was performed, May 9, 1923.

A dark field examination of the tissue of the breast was negative for spirochetes, but examination of the axillary glands showed actively motile spirochetes which had all the morphologic appearances of Spirochaeta pallida.

Five days subsequent to the operation there developed a reddish, papular rash over the chest, back and shoulders with a tendency of the rash to become confluent over the back. The patient was given, in the course of his stay at the hospital, four intravenous injections of neoarsphenamine, daily inunctions of mercury and 10 grains (0.65 Gm.) of potassium iodide three times a day, increasing 1 grain (0.06 Gm.) daily. Under this treatment the rash disappeared.

Postoperatively, the wound became infected and was treated alternately with dichloramine and surgical solution of chlorinated soda. Culture from the wound produced colonies of Staphylococcus albus.

Following the operation, three different Wassermann reactions were negative. Urinalysis still revealed the presence of albumin and a few pus cells.

The patient was discharged, June 6, 1923, with a slight infection of the upper wound. He was advised to return to the dispensary for antisyphilitic treatment.

The gross specimen consisted of the left breast, with a zone of skin around the nipple measuring about 2 cm. from the nipple to the skin margins. It included the pectoral muscle and fascia together with the axillary glands, their fascia, and fat (fig. 2). The nipple and the underlying tissue were reddened and showed evidence of induration, which extended for some distance into the underlying tissues. Section through the nipple showed the skin to be smooth and thin but with evidence of maceration beneath. There was an indurated mass which extended from the epithelium downward, for a distance of about 0.5 or 1 cm. Nothing further could be determined in the gross. Section through the axillary glands, which were from 1 to 1.5 cm. in diameter, showed them to be semitranslucent, with no gross evidence of metastatic growth. The glands were firm.

Microscopic section showed a break in the skin surface, at which point the subcutaneous tissue was infiltrated by cells of acute and chronic inflammation (fig. 3). The surrounding epithelium appeared to be thickened and was seen projecting down into the underlying connective tissue. The basement membrane of the surrounding epithelium was intact. Passing from the ulcerated epidermal layer, where polymorphonuclear leukocytes predominated, to the fibrous subcutaneous layers, was a diffuse infiltration of round, epithelioid and polymorphonuclear cells among which were seen fibers of muscle and connective tissue, with an increase in the fibrous tissue elements. The lymph spaces were filled with round cells which, in some areas, seemed to choke them. There was an increase in the number of blood vessels, which presented a thickened lining of endothelial cells and a surrounding perivascular mantle of round cells consisting of lymphocytes, large mononuclears and plasma cells (fig. 4). There were also a number of epithelioid cells

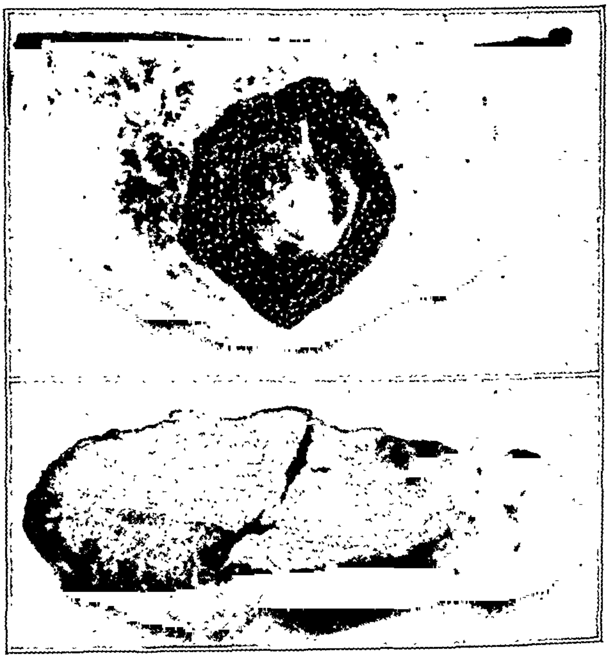

Fig. 2.—The gross specimen, above, showing a reddened, indurated and ulcerated area about the nipple. A cross-section through the nipple, below, showing an indurated mass extending from the epidermis downward.

intermingled with the round cells. There were a few areas which presented this inflammatory tissue in concentric circles with an occasional giant cell. However, these tubercle-like arrangements were not of the type usually seen in tuberculosis. There was no evidence of malignancy, and there were no caseation and no hyalinized areas in this section.

COMMENT

This case is an interesting one not only from the point of view of the unusual location and the rarity of breast lesions in the male but also because it presents a definite problem in diagnosis.

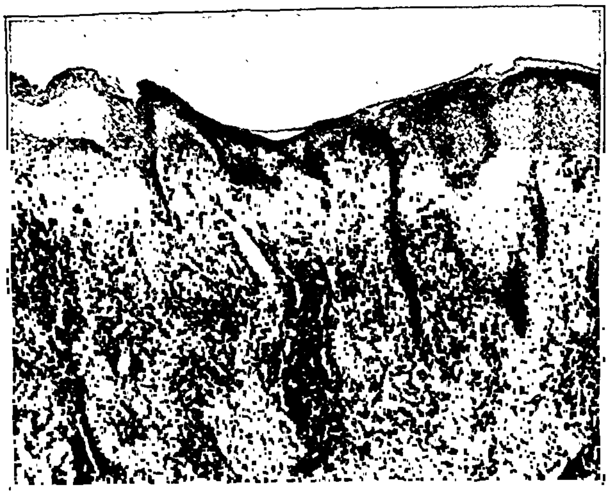

Fig. 3.—Break in the normal epithelium. Evidence of acute and chronic inflammation as well as perivascular infiltration is seen.

Although tuberculosis and mycotic infections were considered, the two most likely preoperative possibilities in this case were syphilis and Paget's cancer of the nipple. The preoperative evidence, in this case, was confusing in spite of the laboratory examinations. The history of a human bite followed by infection and lymphadenopathy, in an alcoholic individual, is suggestive of syphilis, but the negative Wassermann reactions and the absence of spirochetes in the ulcerated breast are against the presence of a syphilitic lesion. The final diagnosis was confirmed by the perivascular round cell infiltration, the presence of Spirochaeta pallida in the left axillary glands and a maculopapular rash which disappeared with the administration of antisyphilitic treatment.

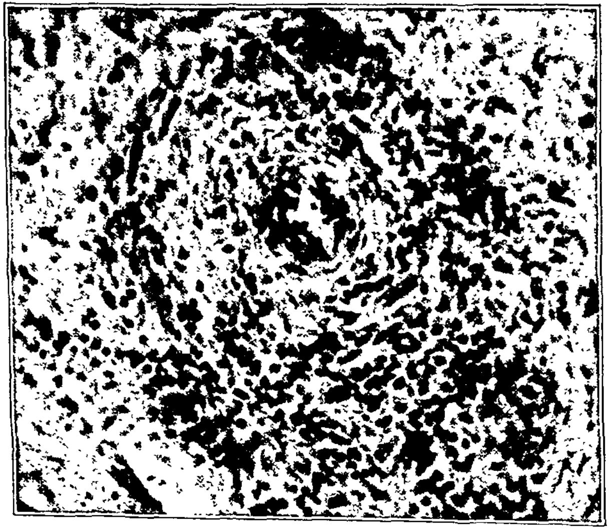

Fig. 4.—Blood vessel with thickened endothelial lining and typical perivascular infiltration of round cells and epithelioid cells.

Charity Hospital.

GALVANIC BURNS OF THE ORAL MUCOSA

Lester Hollander, M.D., Pittsburgh

In a recent contribution, Everett S. Lain[1] called the attention of American dermatologists to an important and what might appear as a relatively frequent cause of lesions of the oral mucosa.

Three patients have come under my observation recently in whom annoying lesions of the oral mucous membrane disappeared on the removal of amalgam and gold dental fillings and other gold appliances in accordance with the principles outlined by Lain. Each instance can be considered clinically to have been a galvanic burn of the oral mucous membrane.

REPORT OF CASES

Case 1.—Mrs. A. P., aged 28, was examined, March 10, 1930, on account of multiple, recurrent and exquisitely painful ulcers of the oral mucosa, resembling the clinical picture of aphthous stomatitis. The ulcers first appeared about two years before and usually numbered from fifteen to thirty at various times, being always decidedly worse just before her menstrual periods. A routine examination revealed little of importance.

Mouth smears were negative.

Gastric analysis showed a low content of hydrochloric acid.

The pharynx and the cornea were in a condition of anesthesia, as one at times finds in hysteria.

Testing of sensitivity to foods both by intradermal injections and by the trial method proved nothing.

When the patient was given dilute hydrochloric acid in doses of 30 minims (2 cc.) the lesions of the mucous membrane increased.

Slowly the patient was so much worse that she found it extremely difficult to masticate her food. She was then placed at absolute rest in bed, on a milk diet, for a period of six weeks. There was some improvement, but the ulcers continued to recur.

Shortly after Lain's communication, all the amalgam fillings were removed from her teeth and replaced with temporary (cement) fillings. Within ten days there was a great change and since then there has been no recurrence of the ulcers, though two menstrual periods have passed.

Case 2.—L. W. O., a man, aged 31, was examined, June 16, 1931, on account of a sore tongue of four months' duration. The sore complained of was a whitish-gray elongated patch about 2.5 cm. long and 1 cm. wide, affecting the under and lateral surface of the right side of the tongue opposite a gold fitting of a so-called hygienic fixed bridge, which occupied the space of an extracted lower right first molar. There were two other similar patches on each side of the buccal mucosa.

The patient complained of a metallic taste.

He smoked about twenty cigarets a day.

Smears of the mouth, and general and serologic examinations, proved nothing.

On account of the appearance of the lesions and the history of a fair amount of smoking I considered the lesions as "smokers' patches," but the discontinuance of the use of tobacco had no effect on the lesions.

Further questioning proved that these lesions began shortly after the "hygienic fixed bridge" was placed in the mouth. Examination also showed a number of amalgam fillings in the teeth.

On removal of the gold bridge, all the lesions disappeared.

In January, 1932, the same gold bridge was replaced and within one week the same lesion of the tongue and on the right buccal mucous membrane and also the metallic taste reappeared. Within a week after the second removal of the gold bridge the lesions and the metallic taste disappeared, and the patient's mouth since then has remained well.

Case 3.—N. K., a man, aged 41, consulted me, Dec. 15, 1931, on account of painful and recurring ulcers of the mouth, which clinically resembled those of aphthous stomatitis. This condition had been recurring for a period of eighteen months. There were eight lesions in the patient's mouth, each one oblong and sharply defined, with an inflammatory halo around a necrotic center, which was covered by a yellowish pyogenic membrane. He did not complain of a metallic taste. He had many amalgam fillings in his teeth and also a gold crown over the lower left incisor tooth. After the removal of this crown, the ulcers disappeared and have not recurred since.

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[1] Lain, E. S.: Chemical and Electrolytic Lesions of the Mouth Caused by Artificial Dentures, Arch. Dermat. & Syph. **25**: 21-31 (Jan.) 1932.

COMMENT

Each instance seems to point to the fact that the principle of Lain is correct and that two dissimilar metals suspended in normal saliva, which is a fair electrolyte (Hodgen, quoted by Lain) complete a galvanic battery.

SUMMARY

One case of so-called smokers' patches (leukoplakia) and two cases of aphthous stomatitis-like ulcers of long standing were cured when the metals producing the galvanic burns of the oral mucosa were removed, after all sorts of other therapy failed.

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Special Article

THE CLINICAL SIGNIFICANCE OF VITAMIN D IN INFANCY AND CHILDHOOD

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[Editorial Note.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and *by the Committee on Foods and are published under their auspices. The* opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

The importance of vitamin D as an indispensable accessory food factor in proper growth and nutrition has been established beyond doubt by the most extensive scientific and clinical investigation. Beginning with the work of Mellanby in England, who first demonstrated that the experimental rickets of animals was controllable by the giving of cod liver oil or butter fat, there has been a steady accumulation of scientific facts and clinical data regarding this vitamin.

To McCollum and his co-workers belongs the credit of having first differentiated vitamin D from other accessory food factors and of having definitely established its identity. They also found that cod liver oil contained this factor in the highest degree and was practically a specific if high vitamin D effect was desired. This scientifically confirmed the experience of Nordic seafaring peoples that the oil of the liver of the cod was a potent remedy for many bodily ailments of that time.

The exceptionally able investigations of McCollum, Sherman, Hess and many others then showed beyond a doubt that vitamin D was not alone a specific in the cure and prevention of rickets but also a potent factor in the metabolism of the elements calcium and phosphorus in the animal body.

In 1919, Huldschinsky of Berlin made the interesting discovery that he could improve and cure rickets by the use of the ultraviolet radiation from a quartz mercury vapor lamp. This was in confirmation of clinical experience first mentioned by Palm in 1890, who observed and reported the specific curative effect of sunlight on rickets and, again, was a scientific explanation of the experience mentioned in the earliest Greek and Roman medical writings that sunlight and mountain or sea air in connection with it were most beneficial in certain constitutional and deforming diseases.

A series of exceptionally fine researches by European and, notably, the American investigators McCollum, Park, Hess, Steenbock and Blunt definitely showed that the ultraviolet portion of the solar spectrum produces all the effects of vitamin D in the animal organism and that it not only does this directly but, through irradiation and photochemical activity, can activate certain substances so that they possess the properties of vitamin D which they had in no degree before such irradiation.

These strange and baffling facts were clarified considerably and explained with the discovery that the potent part of a substance active in vitamin D was contained in a nonsaponifiable fat fraction which it contained and which could be activated or made vitamin D containing or potent by solar or ultraviolet irradiation. It is a sterol in these substances that takes on this potency. The proof that by photochemical activity vitamin D can be formed from ergosterol is one of the most brilliant recent discoveries of biochemistry. Ergosterol is widely distributed in nature and is found in great abundance in the skin of the living animal organism. The formation of vitamin D from the ergosterol in the skin of man and animal undoubtedly explains the antirachitic and other beneficial action of solar or artificial ultraviolet ray. All experimental evidence so far at hand points to the specific influence of vitamin D on the calcium and phosphorus metabolism of the animal organism.

The importance of the properly balanced relationship of these two sovereign elements in the living organism are well understood. If they are disturbed or abnormal or if either one or both of the elements is inadequately present, more or less serious functional as well as structural disturbances occur in the organism. In some as yet unexplained manner, vitamin D exerts a regulatory function over these elements and tends to correct abnormal relationships and change unfavorable negative balances to the positive or favorable side. In rickets, the disease that has furnished practically all the scientific data which have led up to the remarkable discoveries of the properties of vitamin D, appear these peculiar disturbed relationships between the calcium and phosphorus metabolism. They occur in all forms of rickets whether spontaneous or artificially produced in the human or animal organism.

All experimental evidence seems to show that for the development of rickets two dietary defects are apparently required. There is conceivably either a low or an unbalanced intake of calcium and phosphorus, and there must be a lack of the unidentified organic substance which is now designated as vitamin D. There are carried in the blood plasma, calcium, phosphate and carbonate, the principal inorganic constituents of bone. According to a theory advanced by Howland and Kramer, these substances diffuse into the interstitial spaces when they arrive in the osteoid tissue. If for any cause the carbon dioxide tension falls below normal, there is an increase in alkalinity, a condition that favors the precipitation of calcium salts.

In rickets, the adequate precipitation of calcium salts fails to take place. L. E. Holt, Jr., believes that precipitation of calcium salts continues even during severe rickets, but because of the inorganic phosphorus deficiency in the blood serum proceeds at a much slower pace than in the normal child, or in healing rickets.

There is in the rachitic subject generally less than enough calcium or phosphate present in the blood plasma. These are the materials from which bone salts are constructed. There is also presumed to be less than the requisite concentration of these substances in the interstitial fluid of the osteoid tissue. In such a case precipitation of the calcium salts would not occur.

There is generally very little lowering of the blood calcium in ordinary rickets. The phosphate ion, however, the other important element in the formation of triple calcium phosphate, is always low. Experimental rickets can be consistently produced in the rat or in other animals by the effect of this combination in the absence of vitamin D. A low phosphorus diet with a high calcium intake tends to block completely the absorption of phosphorus by the formation of the sparingly soluble triple calcium phosphate in the intestinal tract. Without changing the diets in any way, the addition of vitamin D in the form of cod liver oil will in a remarkably short time accurately restore the normal values for plasma calcium and phosphorus.

Practically the same effect as that produced by cod liver oil can be produced by sunlight. From the work of Hess, Steenbock and others it is now known that the vitamin D effect of sunshine is doubtless the result of solar photochemical activation. These authors have demonstrated that various other oils, ordinarily therapeutically inert, can be activated and rendered rickets curative by solar or ultraviolet irradiation.

Studies in experimental rickets and of the human form have demonstrated clearly that a lack of a certain unidentified accessory food factor or a lack of sufficient sunshine is the chief causative factor in the production of rickets. How these two agencies, if adequately supplied, bring about a proper correct concentration of calcium and phosphorus in the fluids of the animal organism lies at present still beyond our knowledge. We are only confronted with the indubitable proof that the presence of the one or the other and preferably a combination of the two will with absolute certainty prevent and cure the disease rickets, one of the most prevalent diseases of childhood and one which indirectly has been responsible for part of the high infant mortality.

The activating and regulating effect of vitamin D on mineral metabolism is not limited to the disease rickets. Many disorders in which is involved a faulty balance of the elements calcium and phosphorus, or in which these elements are not properly utilized, fall within the therapeutic sphere of vitamin D. In infantile and juvenile tetany a disbalance between these elements definitely exists. This disorder, so commonly associated with rickets, is generally present in manifest or latent form if the blood calcium sinks to very low levels. The blood phosphorus may not be changed much from the normal. It is a disorder that is almost in complete abeyance during seasonal periods when maximum amounts of solar ultraviolet are available. The curve of its prevalence reaches its peak during the dark winter months, when this is not the case. Dietary errors that tend to inadequate intake of the mineral calcium or to faulty absorption or utilization may be contributing factors. The most strikingly beneficial remedy in the relief of the disorder is vitamin D in the form of cod liver oil combined with solar or artificial ultraviolet irradiation. Such obscure disorders as osteogenesis imperfecta or osteopsathyrosis and celiac disease are at times distinctly benefited by the liberal use of vitamin D in the therapeutic procedures attempted for these difficult disorders. It is true that the effect is not so striking as in rickets or in tetany, for the reason that the pathology of these disorders is still very obscure and their true etiology shrouded in much mystery.

The liberal use of cod liver oil is indicated in most acute and chronic disorders in which there is excessive loss of calcium or phosphorus and severe degrees of malnutrition. A large mass of clinical data and experience, supported by much good critical scientific investigation, attest the therapeutic value of vitamin D in such disorders. For the rapidly growing young organism, it is an absolutely essential factor in the diet if proper and adequate growth and development are to take place. At no time in the child's life is the demand for the essential elements and, above all, for calcium and phosphorus, so great as in infancy and early childhood. At no time is the proper and orderly balance of these elements more easily disturbed and pathologically altered. It is for this reason that rickets in varying degrees is so widespread a disorder in this period of life and why the adequate introduction of the vitamin D factor is quite indispensable, not only as an optimal growth producing factor but as a rickets preventive or curative factor as well.

The favorable effect of vitamin D on tooth structure and its action in some measure as a preventive of dental caries is definitely proved by the research of May Mellanby, P. R. Howe, Boyd and Drain, and others. It has been found that practically all types of antirachitic treatment, including cod liver oil and ultraviolet radiation, have a favorable effect on the teeth. Not only was the tooth structure improved and the calcium content of it increased but the tendency to caries modified as well.

All sources of vitamin D, whether natural in the foods, such as in cod liver oil or egg yolk, or artificial, such as in irradiated food products or irradiated sterols, were in a high degree effective. These effects are particularly striking during the period of active growth.

There is a definite and direct relationship between the original structure of the tooth and its liability to decay. In an extensive study of children's teeth, May Mellanby found sound tooth structure in only about 14 per cent of the cases. Like the original structure of the tooth, the secondary dentin depends on the quality of the diet. If the amount of vitamin D in the diet is adequate, the secondary dentin will be well calcified. If it is lacking or grossly inadequate, the secondary dentin will be of poor quality or will be absent altogether. The studies of Mrs. Mellanby showed further that increased quantities of vitamin D, whether in the form of butter, eggs and cod liver oil, or as irradiated ergosterol, have a definitely beneficial effect in the prevention of caries in the teeth. Similar observations were made by Boyd and Drain. All experimental evidence seemed to point to the fact that the presence of vitamin D in the diet is not only essential for the original development of the tooth but also an important factor in building up the resistance of the tooth and preventing caries or checking its spread.

CALCIUM AND PHOSPHORUS METABOLISM

There are three periods in the life of the organism when the elements calcium and phosphorus are particularly needed: during the growth period of the young organism when these elements are stored in its own body; during the period of pregnancy when the necessary amounts must be reserved for the fetus, and during lactation when a substantial amount must be furnished through lactation to the organism just born and during the early part of infancy, when its chief source of nutrition is generally the mother's milk.

The fetus has definite requirements for calcium and phosphorus. They are relatively less large than those required by the growing organism after birth and are derived entirely from the maternal organism. The question arises whether the mother can furnish them all from her food intake alone or whether she must draw on some of her own tissue reserves, such as bones or teeth, to supply adequately any deficient amount. The same question arises during the period of lactation if the infant receives only breast milk.

With recent knowledge of the action of light and its faculty to make available vitamin D through irradiation and photochemical activation, the possibility of favorably affecting calcium and phosphorus balances in the pregnant and lactating female through this procedure, in addition to the use of high vitamin D containing foods and substances, has been thought of. In the human fetus the elements are stored from about the fourth month on. The storage, which begins slowly at first, becomes more rapid toward the end of pregnancy. About two thirds of the total amount stored at birth is stored during the last two months of pregnancy. The amount of calcium and phosphorus stored by the mother during gestation varies considerably. Sometimes it is well above the supposed fetal demand. Again, it may be considerably below. This is especially true of calcium. In such cases the mother is either taking the elements from her own tissues or the fetus is getting an insufficient supply.

The same situation seems to prevail for the lactating mother. Some mothers actually store calcium and phosphorus during lactation; others lose it, especially when the milk production is at its height. Restorage begins, however, when the production falls to lower levels. Experimental evidence has shown, however, that such losses practically do not occur when an adequate amount of vitamin D is provided in the form of cod liver oil if adequate amounts of the minerals are offered in the dietary. The experiments on the human being are paralleled closely by the clear-cut positive finding in the animal, such as the goat, the cow and the rat.

Vitamin D furnished in the form of solar or artificial ultraviolet irradiation of the woman will influence her milk—apparently much more than the taking of cod liver oil. The infant, however, does not benefit by such indirect treatment to the extent that he does by direct irradiation and by receiving cod liver oil himself. Every experimental and clinical evidence points to the importance of vitamin D in the form of solar irradiation or cod liver oil or both, in addition to adequate calcium and phosphorus containing diets for both the maternal organism and the offspring if normal growth and development on the part of the latter is to be looked for and unusual drain on the former is to be avoided. The impression prevails in some quarters that if enough vitamin D is given and an adequate amount of light is provided, the quantity and proportion of calcium and phosphorus become relatively unimportant. It has been definitely shown that increasing the quantity of calcium and phosphorus in the diet will increase the storage of these elements by both infants and older children. The taking of cod liver oil in addition or the ingestion of irradiated foods will, however, increase the retention markedly in the infant and probably also in the older child.

A good ratio of the two elements in the diet is essential. The ratio of 2:1 or 1:1 of calcium to phosphorus has been suggested and seems to be ideal and, if present in a neutral medium, will give the best retention of the two elements in both the human and the animal organism.

The kind of food that makes up the child's dietary has considerable influence on the calcium and phosphorus metabolism. Foods and food mixtures vary considerably in the degree and readiness with which they give up calcium and phosphorus to the body. This can largely be overcome by irradiation with ultraviolet rays or by the addition of supplements containing an adequate amount of vitamin D. Some of the sugars, such as lactose, elevate calcium retention if taken in large amounts.

Orange juice causes an exceptionally high storage of calcium and phosphorus. Sherman and Hawley have shown that the storage of calcium from vegetables is rather low and inadequate for the juvenile organism but is good for the adult.

DISTRIBUTION OF VITAMIN D

According to present-day information and present knowledge, the distribution of vitamin D in nature is rather limited. Certain food and medicinal substances in common use contain it in considerable amount. All scientific investigators agree that cod liver oil contains it in a high degree in the natural state. Bills of the Mead Johnson research laboratories is of the opinion that the cod can synthesize vitamin D. The evidence is not so clear that the fish elaborate the vitamin through the influence of ultraviolet irradiation. Bills has also developed a clear-cut method of measuring the potency of any given cod liver oil in units of vitamin D. Largely on the basis of the method of the Wisconsin Alumni Research Foundation, the Council on Pharmacy and Chemistry of the American Medical Association has designated as a "rat unit of vitamin D, that amount of vitamin D, which when uniformly distributed into the standard vitamin D deficient diet-ration 2965 (*J. Biol. Chem.* 64:263 [June] 1925)—will produce a narrow and continuous line of calcium deposits in the metaphyses of the distal ends of the radii and ulnae of standard rachitic rats." The line test and McCollum's rachitogenic diet are henceforth the acceptable procedures by which a rat unit of vitamin D is to be determined.

The liver oil and body oil of certain other species of fish are also highly active. This is true of the halibut, puffer fish, the goosefish, the shark, the haddock, the herring, the sardine, the salmon and the burbot. The liver oil of the puffer fish and the burbot, for example, is eight times as potent as cod liver oil. Few of these oils, aside from cod liver oil, are used for their vitamin D content. It is quite possible that their importance and value in this regard are not fully appreciated and that what is really an excellent source of vitamin D is entirely overlooked or not properly made use of.

The second most potent source of vitamin D, after these fish oils, is egg yolk. Mellanby, A. F. Hess, Kramer and Casparis first showed that egg yolk, if added to rickets producing diets, will both prevent and cure rickets in the experimental animal; he also demonstrated the same activity for the human subject. Other investigators have confirmed his observations but have the impression that egg yolk is more certain to prevent rickets than to cure it. The potency of egg yolk varies and is largely dependent on the diet of the hen and the amount of solar or artificial ultraviolet irradiation it receives. Hart and Steenbock, for example, were able to increase the antirachitic potency of eggs tenfold by irradiation of the hens. Cod liver oil fed to the hens will have a somewhat similar effect.

Butter fat contains relatively little of the antirachitic factor D. According to Coward, it ranges from 0.8 to 1.0 unit of vitamin D, as compared with 50 to 150 units for cod liver oil. The quantity of vitamin D in cow's milk and butter varies to some extent with the cows, as Hess has shown recently that it can be influenced definitely by feeding irradiated yeast to the cows. Some investigators have found this to be particularly true for the goat.

The studies of Hess and Weinstock and of Outhouse and Macy showed practically no vitamin D content in human milk. Studies of Weech and Hess and Weinstock have shown that the administration of cod liver oil or irradiation of the mother with sources of ultraviolet rays can confer some vitamin D activity on human milk although by no means the amount that can be conveyed to the infant by using these agents directly.

Practically all vegetables, whether in the fresh green state or dried, have no vitamin D content and have practically no antirachitic potency. This seems strange in view of the fact that vegetables are grown in abundant sunshine and that they can nearly all be activated if irradiated artificially with ultraviolet rays. The explanation may lie in the fact that the amount of ultraviolet radiation in sunshine that reaches the earth is relatively small and that the plant kingdom is rather poorly provided with any system for the translocation of lipoids.

Vegetable fats are not antirachitic in their natural state. Coconut oil is an exception. If sun dried, it may have a very slight content of vitamin D. Many of the vegetable oils become highly potent under ultraviolet irradiation.

ACTIVATION BY IRRADIATION

The discovery that certain parts of the solar spectrum have the photodynamic action of activating certain organic substances in the plant and animal kingdom and of giving them vitamin D characteristics is one of the great biologic discoveries of the age. This discovery raised the question as to the chemical composition of vitamin D. As yet this is not known, but a good deal of information about it is at hand. The activity centers about the unsaponifiable fraction of oils or other foods, which in fats and oils consists largely of cholesterol and in plants of phytosterol. Cholesterol occurs in the brain, skin and blood and in very small amounts in every cell of the body. A third sterol, ergosterol, very similar in composition to cholesterol, is now known to be quite as widely distributed in the animal and plant organism as cholesterol and phytosterol. It is particularly abundant in yeast and ergot and is the most widely distributed of all sterols. While ordinary cholesterol can be activated by irradiation, it has been found that ergosterol possesses the remarkable property of acquiring antirachitic potency on irradiation to an extent 2,000 times as great as cholesterol and that it was the contaminant of ordinary cholesterol and in this way brought about activation of ordinary cholesterol on irradiation.

The extraordinary activity of irradiated ergosterol has been demonstrated on both the young animal and the human young. Its beneficial effects on blood calcium and phosphorus levels, on the retention of calcium and phosphorus and on the calcification of bones are immediate and striking. It is the chief source of vitamin D made available in nature through photodynamic activity of the solar spectrum.

DOSAGE

It is quite probable that the extent to which any food can be irradiated depends at least in large part on the amount of ergosterol it contains. There is a great deal of evidence indeed to support the theory that ergosterol is the parent substance of vitamin D. The remarkable power of irradiated ergosterol to cure rats with rickets was found equally effective in the cure of rachitic children. Extensive clinical experience has shown that it has a remarkably reliable and rapid action. By many it is regarded as the therapeutic agent of choice for rickets and tetany. Because of its tremendous potency, the dose needed is very small, usually about 0.05 mg. daily (if the sterol has been skilfully activated). Its effectiveness in such small dosage obviously gives it a great advantage over cod liver oil, which must be given in a much larger amount to get a comparable effect. Another advantage of treatment with irradiated ergosterol is the speed with which favorable results are obtained. In the cases of advanced rickets these may even be dramatic. Advanced craniotabes may clear up in two weeks under its use. Extensive calcification of the ends of long bones has been observed in an equally short time. Normal phosphorus levels were often observed as early as one week or ten days after treatment. No other form of treatment of rickets will give so rapid a result. Similar good results have been observed in cases of tetany.

In comparing the effect on the calcium balance in tetany of cod liver oil, ultraviolet radiation and ergosterol, Bakwin found that with cod liver oil it took an average of sixteen days before the blood calcium returned to normal levels and fourteen days with ultraviolet rays but only seven days with ergosterol. The most extensive clinical experience with this agent now has shown that it is absolutely reliable in the prevention as well as the cure of rickets if adequate amounts are given. The cure is more rapid than with other agents, such as cod liver oil, its concentrates or with direct irradiation. It may not always protect the rapidly growing premature infant if given alone, but in combination with other antirachitic agents it is quite superior to any other agent used.

Excessive dosage of irradiated ergosterol may have a harmful effect. In the experimental animal these effects may be fatal. They are not likely to be observed in the human being, as the dosage fatal to the experimental animal is at least 10,000 and possibly 40,000 times as large as the amount required to prevent or cure rickets. The principal toxic effect is expressed in the blood calcium and blood phosphorus. This may be increased by 25 or 50 per cent of the normal. The toxic effects of excessive doses of vitamin D appear to be in direct proportion to the size of the dose. If the excessive dose of irradiated ergosterol is discontinued, the animal will rapidly recover from the toxic effects. Its appetite will return, normal growth will be resumed, and the excessive deposit of calcium will cease.

Excessive dosage of vitamin D in the form of irradiated ergosterol will cause hypercalcemia. This is more likely to occur if the preparation is used for prophylactic purposes rather than for the curative treatment of a case of active rickets or tetany.

Great variation has existed in the potency of various irradiated ergosterol preparations. The potencies of five European preparations determined in the research laboratories of Mead Johnson & Co. ranged from 14 to 800 and even 2,500 times the potency of cod liver oil. The standard adopted by the Wisconsin Alumni Foundation is the one now generally accepted in the United States and postulates a potency for irradiated ergosterol preparations of 250 D, by which is meant a preparation 100 times as potent as a good cod liver oil or 250 times the Wisconsin standard. Two drops of it are equivalent in vitamin D potency to a teaspoonful of cod liver oil.

The Council on Pharmacy and Chemistry has accepted irradiated ergosterol prepared as prescribed by the Wisconsin Alumni Foundation Standard, under the name of "viosterol." The term "viosterol" signifies that the irradiated ergosterol was dissolved in oil. The daily prophylactic dose for an average infant or child of this viosterol preparation in oil is approximately 10 drops. For the premature and rapidly growing infant it may be much higher. The daily curative dose is from 20 to 30 drops and in severe cases may be considerably in excess of such an amount.

DESIRABILITY OF CAUTION

This very important vitamin is available, then, to man in various ways and its rather limited distribution in a natural state is counterbalanced by the ingenuity of the research laboratory in liberating it and making it available in practically unlimited amount from sources totally unsuspected or unthought of only a few years ago. A nation-wide propaganda emphasizing the importance of vitamin D in the proper growth and development of the animal organism and calling attention to the sources from which it can be made available has seized on the popular imagination to an almost unbelievable degree. There are comparatively few infants or children now who are not receiving cod liver oil in some form or are extensively exposed to solar or other forms of radiation.

One cannot escape the feeling that a somewhat similar criticism is warranted with regard to the use of light as a source of vitamin D. In an excess of zeal the public has seized on all forms of radiation with an enthusiasm that has reached almost alarming proportions. There is considerable evidence, both in the experimental animal and in the human subject, that light can be harmful if used to excess. All clinical evidence seems to show that excessive use of light in any form can have effects quite the reverse from those anticipated or desired. A return to a more moderate use of this potent agent and remarkable source of vitamin D would seem to be reasonably indicated, at least until its potency can be more accurately measured than is now possible.

Vitamin D is one of the indispensable essentials of the growing animal organism. This knowledge and its widespread use has already resulted in much good. The incidence of rickets, formerly so large, has been diminished to a remarkable degree and with it the complicating features which directly or indirectly were so large a result of this disorder and contributed in large measure to infant morbidity and mortality. Much is known about this important vitamin. There is much that is still mysterious and unknown. This is particularly true of the photodynamic activity of the solar spectrum. There is every reason to believe that the unfolding of these secrets will reveal additional potencies of vitamin D and will reveal what is now not known about its structure and the mechanism of its production and activity.

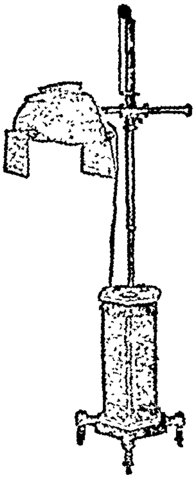
920 East Fifty-Ninth Street.

Council on Physical Therapy

The Council on Physical Therapy of the American Medical Association has authorized publication of the following reports.
H. A. Carter, Secretary.

BURDICK SUPER-STANDARD AIR-COOLED LAMP ACCEPTABLE

The Super-Standard Air-Cooled Lamp is the trade name for an ultraviolet radiation lamp manufactured by the Burdick Corporation, Milton, Wis. The ultraviolet radiation generator (the burner) used in the lamp was developed by the Cooper-Hewitt Laboratories and consists of a quartz tube containing mercury in a vacuum. The mercury lies in a well at the cathode end of the burner. The other, or anode, end is fitted with a tungsten target. The metal lead-in wires are sealed in the fused quartz through intermediate steps of glass with decreasing coefficients of expansion. This forms a vacuum seal with a capacity for withstanding extremely high temperatures.


Burdick Super-Standard Air-Cooled Lamp.

A specially designed chromium reflector confines the rays over an area the size of an ordinary treatment cot 7½ feet long by 22 inches wide. The burner, reflector and ventilating hood are mounted on a counterbalanced upright erected on a triangular frame. Resting on rubber tired rollers, the unit may be moved easily from place to place. The upright is adjustable from a height of 45 to 75 inches. The cross-arm supporting the hood burner has a 15 inch extension. This extension arm is supported by a carriage and, together with the casing, they form a ball-bearing swivel unit which may be rotated on any horizontal plane without producing a tension on the steel-wire cable. There is a small steel tape measure with spring return mounted on the end of the casing. The physician can read the distance between the burner and the patient readily. The shipping weight is approximately 150 pounds.

The Super-Standard Air-Cooled Lamp may be wired to operate on either a direct or an alternating current with no change in outward appearances. The physician must indicate the type of current (e. g., A. C. or D. C.) available in his office when ordering the unit.

The emission characteristics will be published at a later date. The company claims that at a distance of 30 inches from the burner to the patient the lamp emits a maximum amount of ultraviolet radiation sufficient to produce a first degree erythema (mild reddening) on the average person after an exposure of thirty seconds.

ELECTRICAL OPERATING CHARACTERISTICS

Alternating Current	*Direct Current*
Line voltage.......105 to 120 volts (60 or 25 cycle)	Line voltage.............120 volts
Starting amperage.....12 amperes	Starting amperage.....10 amperes
Operating amperage...7.5 amperes	Operating amperage...4.5 amperes
Maximum burner voltage...165 to 175 volts	Maximum burner voltage....75 to 80 volts
Minimum burner voltage..75 volts	Minimum burner voltage..35 volts

Note.—Direct current, 220 volts; operating amperage, 3.5 amperes. Maximum burner voltage, 170 volts.

The Burdick Corporation claims that the Super-Standard Air-Cooled Lamp will produce ample ultraviolet radiation to protect against and cure rickets in children. The firm claims that the lamp is an efficient generator of ultraviolet radiation to supply the wants of a physician practicing ultraviolet radiation therapy in accordance with the technic adopted by the Council.

The Council on Physical Therapy declares the Super-Standard Air-Cooled Lamp eligible for inclusion in its list of accepted devices for one year.

SUPER ALPINE SUN LAMP ACCEPTABLE

The Super Alpine Sun Lamp (Physician's and Hospital Unit) is a trade name for an ultraviolet radiation lamp, manufactured by the Hanovia Chemical & Manufacturing Company, Newark, N. J. The ultraviolet ray generator is a high-pressure low-voltage mercury arc enclosed in transparent fused quartz, suitably mounted, air-cooled, and designed, according to the firm, for continuous performance in therapeutic general irradiation.

The burner consists of an evacuated tubular vessel, constructed entirely of transparent fused quartz. Aluminum radiating fins maintain the mercury pools at an efficient operating temperature. Radiant energy is generated by means of an electric discharge through mercury vapor between sealed-in tungsten electrodes. The light energy emitted consists in part of ultraviolet, visible and infra-red radiations.

ELECTRICAL OPERATING CHARACTERISTICS

Alternating Current	*Direct Current*
Line voltage.........105-120 volts (60 or 25 cycle)	Line voltage.............120 volts
Starting amperage.....12 amperes	Starting amperage.....10 amperes
Operating amperage...7.5 amperes	Operating amperage...4.5 amperes
Maximum burner voltage....165 to 175 volts	Maximum burner voltage....75 to 80 volts
Minimum burner voltage..75 volts	Minimum burner voltage..35 volts

NOTE.—Direct current, 220 volts, operating amperage 3.5 amperes. Maximum burner voltage, 170 volts.

The burner is mounted rigidly on a hood frame which may be adjusted to suit the convenience of the operator. The hood serves as an outer shell for the polished chromium reflector of special design. Between the copper hood and the polished chromium reflector is a ventilation passage designed to assist materially in cooling the burner and to maintain a comfortable hood temperature. The hood is equipped with two hinged doors for intercepting light or to control within limits the area being irradiated.

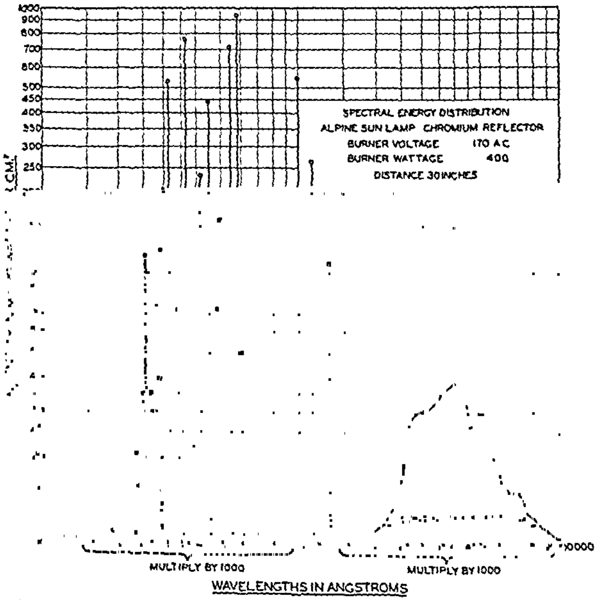


Fig. 1.—Radiation characteristics of Super Alpine Sun Lamp; observation taken directly under the burner.

The manufacturer claims that rotation of the reflector about the burner is a unique feature permitting the employment of the lamp for group irradiation. On one side of the hood there is fastened a steel tape measure which may be conveniently employed to measure the distance between the patient and the burner.

The lamp hood is supported on the upright by means of a main swing head and cross arm, and counterbalanced by a counterweight on the inside of the upright. This is a vertical travel from a minimum position in which the burner is 40 inches from the floor to a maximum height of 70 inches from the floor. The cross arm has a 12 inch travel, and at its maximum extension the burner is 24 inches from the upright. The upright is mounted on the side of the tripod base, so that it may be brought close to the side of the treatment table or bed. The upright is 75 inches in length, with an outside diameter of 1½ inches.

The hospital-type carrier is rigidly bolted to the base. This, in turn, is fitted with three rubber-tired, ball-bearing, 5 inch casters, two of which are straight-stem and fixed; the one in front is swiveled. The clearance under the base is sufficient for movement over a 1½ inch door sill. Thus, the unit can be moved about easily, especially adapting the lamp to ward work and application to bedridden patients. The approximate shipping weight of the entire unit is 150 pounds.

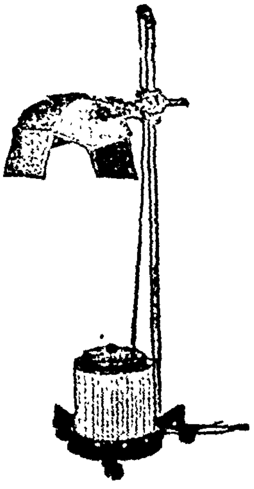


Fig. 2.—Super Alpine Sun Lamp.

The electrical controls are housed in a ventilated steel casing. This casing is equipped with a three-position, 20 ampere, 125-volt snap switch. A voltmeter and roller-contact adjustable rheostat are available for voltage adjustment. The top of the casing is 20 inches from the floor.

The Super Alpine operates on either alternating or direct current. The purchaser must state the kind of current supply before ordering. A transformer is provided for alternating current and a rheostat for direct current.

The company claims that the design of the burner and the reflector in combination results in the projection of the light energy in such a manner that a patient is irradiated simultaneously on the surfaces directly before the lamp and on the lateral surfaces. On a plane surface, at 30 inches distance, the light energy distribution over an area of 5 by 2 feet is relatively uniform.

The emission characteristics are shown in figure 1. The firm claims that, at a distance of 30 inches from the burner to the patient, the lamp emits a maximum ultraviolet energy sufficient to produce a first degree erythema (mild reddening) on the average person after an exposure of thirty seconds.

The Hanovia Chemical & Manufacturing Company claims that the Alpine Sun Lamp will produce ample ultraviolet radiation to protect against and to cure rickets in children, and that the lamp is a suitable generator of ultraviolet radiation to supply the wants of a physician practicing ultraviolet radiation therapy in accordance with the technic adopted by the Council.

The Council on Physical Therapy declares the Alpine Sun Lamp eligible for inclusion in its list of accepted devices for one year.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

ANTIRABIC VACCINE (See New and Nonofficial Remedies, 1932, p. 369).

United States Standard Products Company, Woodworth, Wis.

Rabies Vaccine-U. S. S. P. (Semple Method) (See New and Nonofficial Remedies, 1932, p. 373).—Also marketed in packages of seven vials, each containing one dose; and in packages of twenty-one syringes, each containing one dose.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1932, p. 376).

The Gilliland Laboratories, Marietta, Pa.

Intracutaneous Tuberculin for the Mantoux Test.—Marketed in packages of one 1 cc. vial containing diluted tuberculin sufficient for ten tests. Each dose of 0.1 cc. represents 0.0001 Gm. of tuberculin.

Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

NESTLÉS FOOD

(Malted whole wheat, malt, dry milk, sucrose, wheat flour, salt, dicalcium and tricalcium phosphate, iron citrate and cod liver oil extract. Contains vitamins A, B and D.)

Manufacturer.—Nestlé's Milk Products, Inc., New York.

Manufacture.—An infusion of whole wheat flour and malt flour is malted at a temperature to secure a minimum of maltose and a maximum of dextrins. The liquid containing the soluble materials is concentrated in "vacuum kneaders" (52 C.) to a dough. During the final steps of the concentration, definite quantities of high starch wheat flour, salt and dicalcium and tricalcium phosphates are worked into the dough. The dough is rolled into thin slabs, which are baked at a relatively low temperature to protect the vitamins from destruction as far as possible. The resultant crisp biscuit is powdered and admixed with condensed sweetened milk, calcium phosphate (0.1 per cent of the weight of the final product), iron citrate (0.01 per cent of the weight of the final product) and cod liver oil extract (380 Gm. per thousand kilograms of the dried food). The extract has a vitamin D potency of forty times that of good grade cod liver oil; the addition is equivalent to 1.5 per cent of cod liver oil in the dried food. The mixture is homogenized, "vacuum" (2 inch pressure) dried on drums at 52 C., powdered and packed in hermetically sealed tins in an atmosphere of nitrogen or carbon dioxide.

About 33 per cent is whole milk solids.

Analysis (submitted by manufacturer; in part calculated from the analysis of the component ingredients).—

	per cent
Moisture	2.0
Ash	2.8
Total Fat	9.8
(Milk fat 9.0%	
Cereal fat 0.8%)	
Protein (N × 6.25)	15.0
Sucrose	22.0
Lactose	13.0
Dextrins and maltose	21.5
Starch	13.0
Crude fiber	0.9
Total carbohydrates other than cereal fiber (by difference)	69.5
Iron (Fe)	0.0035
Calcium (Ca)	0.45
Phosphorus (P)	0.35

Calories.—4.3 per gram; 122 per ounce.

Vitamins.—Nine ounces approximate in vitamin D the D content of one teaspoonful (4 cc.) of average cod liver oil (about 48 Steenbock D units: defined by the Council on Pharmacy and Chemistry of the American Medical Association, N. N. R., 1932, p. 423).

Claims of Manufacturer.—A food especially prepared for infants, children and convalescents.

SALLY ANN BREAD

Manufacturer.—Hagerty Baking Company, Philipsburg, Pa.

Description.—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932, p. 817) prepared from patent flour, water, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, salt, sucrose, lard, malt extract and sweetened condensed milk.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.6
Ash	1.7
Fat	3.3
Protein (N × 6.25)	9.0
Reducing sugars as invert sugar	3.7
Sucrose (copper reduction method)	0.1
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	50.1

Calories.—2.7 per gram; 77 per ounce.

RED CHAIN FLOUR (EXTRA HIGH PATENT)—(BLEACHED)

Manufacturer.—Universal Mills, Fort Worth, Texas.

Description.—A short patent hard winter wheat flour for bread baking; bleached and "matured."

Manufacture.—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in The Journal, June 18, 1932, page 2210. Chosen flour streams are blended, bleached with nitrogen trichloride (3 Gm. per barrel) and a mixture of calcium phosphate and benzoyl peroxide ($^{30}/_{100}$ ounce per barrel) and automatically packed in new cotton sacks.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.5
Ash	0.37
Fat (ether extraction method)	1.5
Protein (N × 5.7)	11.4
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	72.8

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—A short patent hard wheat flour designed for bread baking.

McCORMICK'S MAYONNAISE

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Mayonnaise in glass jars; containing refined corn oil, egg yolk, distilled vinegar, salt, sucrose, mustard and paprika.

Manufacture.—Egg yolk, salt, sugar, mustard and paprika in definite proportions are mixed; the mixture and the corn oil ingredient are emulsified. The emulsion is diluted with distilled vinegar and water. The mayonnaise conforms to the United States Department of Agriculture standard.

Analysis (submitted by manufacturer).—

	per cent
Moisture	15.9
Ash	1.1
Water soluble ash (salt)	1.0
Fat (ether extract)	79.4
Protein (N × 6.25)	1.5
Sucrose	1.1
Crude fiber	0.0
Carbohydrates (by difference)	1.6
Titratable acidity as acetic acid	0.5
Lipoid phosphoric acid (P_2O_5)	0.064
Total phosphoric acid (P_2O_5)	0.107

Calories.—7.3 per gram; 207 per ounce.

Claims of Manufacturer.—A standard mayonnaise for table use.

KRE-MEL DESSERT (CARAMEL FLAVOR)

A Mixture of Sugar (Dextrose and Sucrose), Corn Starch, Caramel and Vanillin

Manufacturer.—Corn Products Refining Company, New York.

Description.—Mixture of dextrose, corn starch, sucrose; flavored with caramel and vanillin.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	0.9
Fat (ether extract)	0.1
Protein (N × 6.25)	0.1
*Dextrose	49.0
*Sucrose	20.0
*Starch	23.6
Crude fiber	0.0
Titratable acidity as HCl	0.3
Vanillin flavor	present

* Estimated from formula.

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—A dessert powder for the simple preparation of table desserts.

MITY GOOD GOLDEN TABLE SYRUP

(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—Fox River Grocery Company, Appleton, Wis.

Description.—A table syrup; a corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calories, Claims of Manufacturer.—See these sections for Banner Blue Corn Syrup with Cane Flavor (The Journal, March 5, 1932, p. 817).

UNIVERSAL BAKERS FLOURS (PATENT) (BLEACHED)

Manufacturer.—Universal Mills, Fort Worth, Texas.

Description.—A patent hard winter wheat flour for bakeries; bleached and "matured."

Manufacture.—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended, bleached with nitrogen trichloride (3 Gm. per barrel) and a mixture of calcium phosphate and benzoyl peroxide ($^{30}/_{100}$ ounce per barrel) and automatically packed in new cotton sacks.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.5
Ash	0.41
Fat (ether extraction method)	1.5
Protein (N × 5.7)	11.8
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	72.4

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—A patent hard wheat flour for bakeries.

MEYER'S CORN SYRUP WITH CANE FLAVOR

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—Meyers, Walnut Ridge, Ark.

Description.—This table syrup is the same product as Banner Blue Corn Syrup (THE JOURNAL, March 5, 1932, p. 817); corn syrup base (85 per cent) with refiners' syrup (15 per cent).

REPORTS OF THE COMMITTEE

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

RAYMOND HERTWIG, Secretary.

KING MIDAS FLOUR (BLEACHED) NOT ACCEPTABLE

The King Midas Mill Company, Minneapolis, voluntarily submitted to the Committee on Foods a hard spring wheat patent flour called "King Midas Flour."

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.5
Ash	0.40
Fat (ether extraction method)	1.4
Protein (N × 5.7)	11.5
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	73.0

Discussion of Label and Advertising Slogan.—The slogan "The highest priced flour in America, and worth all it costs" appears on the package label and is used in promotion of the flour. The Committee considers this slogan as overtly incorrect and misleading. The company when informed of this opinion did not provide any information to show that the slogan is warranted for the flour and refused to change it to accord with the Committee's recommendations. This flour therefore cannot be listed among the Committee's accepted foods.

SCHULZ BUTTER-NUT BREAD NOT ACCEPTABLE

The Schulz Baking Company, Pottstown, Pa., submitted to the Committee on Foods a white bread called "Schulz Butter-Nut Bread," prepared by the sponge dough method from patent flour, water, sucrose, dry skim milk, hydrogenated shortening, salt, yeast, malt extract, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.2
Ash	1.9
Fat	1.4
Protein (N × 6.25)	10.2
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	52.1

Discussion of Name.—The name "Butter-Nut Bread" indicates that the bread contains either "butter and nuts" or "butternuts" and in such quantity as to give the product distinctive physical and nutritional characteristics because of such ingredients and different from the customary white bread. The baking formula contains neither butter, nuts, nor butter-nuts. The name is considered inappropriate, misinformative and misleading.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name in accordance with the Committee's recommendations. This bread therefore cannot be listed among the Committee's accepted foods.

KORN'S POTAYTO BREAD NOT ACCEPTABLE

H. Korn Baking Company of Clinton, Iowa, voluntarily submitted to the Committee on Foods a white bread called "Korn's Potayto Bread," prepared by the sponge dough method from patent flour, water, sucrose, sweetened condensed skim milk, a partially hydrolyzed starch, salt, yeast, lard and yeast foods containing, respectively, calcium sulphate, ammonium chloride, sodium chloride and potassium bromate and a mixture of calcium acid phosphate and calcium peroxide.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.4
Ash	1.1
Fat	0.9
Protein (N × 6.25)	9.0
Crude fiber	0.2
Carbohydrates other crude fiber (by difference)	54.4

Discussion of Label and Name.—The name "Potayto Bread" and facsimiles of potatoes on the label indicate the presence of a material quantity of potato ingredient in the baking formula, sufficient to give the bread physical, flavor or nutritional characteristics differing essentially from the usual white bread. The baking formula does not contain any potato material; the name "Potayto Bread" and the potato facsimiles on the label, therefore, are considered unwarranted, misleading and false.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name and label in accordance with the Committee's recommendations. This bread, therefore, cannot be listed among the Committee's "accepted" foods.

GENERAL COMMITTEE DECISIONS

THE COMMITTEE ON FOODS AUTHORIZES THE PUBLICATION OF THE FOLLOWING GENERAL COMMITTEE DECISIONS ADOPTED FOR ITS OWN GUIDANCE AND FOR THAT OF FOOD MANUFACTURERS AND ADVERTISING AGENCIES ON FOOD ADVERTISING.

RAYMOND HERTWIG, Secretary.

FEEDING FORMULAS FOR INFANTS IN LAY ADVERTISING

The feeding of the baby during the first year is of fundamental importance to its health. Wrong feeding may even be fatally disastrous. For this reason every infant, the breast fed and doubly so the artificially fed, should be under the supervision of the physician who is experienced and skilled in the care and feeding of infants.

The feeding of an infant by routine feeding formulas and instructions distributed by food manufacturers, or according to directions, printed material, or advice of any person other than the attending physician who can personally observe the condition of the baby, may seriously endanger the health of the infant.

The promulgation of feeding formulas in advertising to the laity is considered to be in conflict with the best experience, authoritative judgment, and basic principles in infant feeding and is not permissible. No objection is taken to published directions for the preparation of mixtures for use in infant feeding.

FOOD ADVERTISING CLAIMS WITH SCIENTIFIC OR TECHNICAL SIGNIFICANCE

Statements or claims in food advertising with technical, scientific, nutritional, physiologic or "health" significance shall be carefully phrased so as to be in complete accord with established knowledge and authoritative opinion, and shall be free from misleading or incorrect popular implications or interpretations.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - - Chicago, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 30, 1932

THE ANAPHYLACTIC HORMONE

Most clinical allergists emphasize the specific protein reactions of the fixed tissue cells, the purely humoral reactions being assumed to be of minor pathologic interest. Two hypotheses are advocated to account for the resulting cellular intoxication. The first hypothesis assumes that the alien protein-cellular conjugation is in itself a sufficient stimulant to cause contractions of smooth muscle and other local cellular responses. The second hypothesis assumes that the specific colloidal cellular conjugation is in itself relatively nontoxic but leads to a local explosive formation or liberation of highly reactive "allergic hormones," which "anaphylatoxins" act as the immediate local and constitutional intoxicants. The two hypotheses are of more than academic interest, since they suggest quite different methods of treatment. As yet a final conclusion cannot be drawn as to the relative importance of the primary colloidal and secondary hormonal reactions in human anaphylaxis. However, the existence of a secondary allergic toxic factor can no longer be doubted if one is to credit the current biochemical studies by Dragstedt and Gebauer-Fuelnegg[1] of Northwestern University Medical School, and the simultaneously reported anaphylatoxin studies by Bartosch, Feldberg and Nagel[2] of the physiologic institute at the University of Berlin.

Up to the current year the most convincing experimental evidence in support of the explosive formation of an "allergic hormone" was probably the physiologic analyses of canine anaphylaxis by Manwaring and his co-workers[3] of Stanford University. With the usual degree of canine sensitization, anaphylactic contractions of the uterus, urinary bladder and other smooth muscle structures do not take place in dehepatized dogs. Normal canine tissues, such as the urinary bladder, rectum or intestinal loop, transplanted into hypersensitive dogs are thrown into contraction on injection of the specific foreign protein into the resulting composite animal. These results strongly suggest that the smooth muscle contractions of canine anaphylaxis are secondary allergic phenomena, due to histamine-like autointoxicants explosively formed or liberated by the hypersensitive liver. Blood drawn from the carotid artery, immediately after the development of recognizable anaphylactic symptoms, contains no histamine-like factor demonstrable by transfusion into normal dogs. By drawing initial shock blood directly from the liver (i. e., from the ligated vena cava), however, all the characteristic features of somatic anaphylaxis can be reproduced by transfusion into normal dogs. This blood does contain a histamine-like factor.

Confirmation and extension of this work are currently reported by the Northwestern University research group. Physiologic assays of canine thoracic duct lymph, for example, the isolated guinea-pig intestine being the reacting index, demonstrated the presence of this anaphylactic shock hormone. In some experiments 0.25 cc. of this shock lymph added to a 200 cc. bath of Tyrode's solution was sufficient to throw the isolated guinea-pig intestine into a typical histamine-like tetanus. In other experiments as much as 5 cc. of the shock lymph was required to produce the same result. In no instance did normal canine lymph, even in doses up to 20 cc., have any demonstrable histamine-like effect. Chemical studies showed the anaphylactic hormone to be thermostable and dialyzable. The dialysate led to a typical allergic wheal when injected intradermally into human skin. The allergic hormone accumulates in the basic chamber of a three compartment electrodialyzer and is neutralized by condensation with diazotized sulphanilic acid. From this and other experimental evidence the Chicago biochemists are inclined to believe that the canine lymphatic anaphylactic hormone is identical with histamine or, at least, that histamine is its dominant factor.

A similar though less pronounced explosive histaminemia presumably takes place in anaphylactic guinea-pigs. Bartosch and his co-workers transfused hypersensitive guinea-pig lungs with Tyrode solution plus specific foreign protein. The initial 5 cc. sample of the transfusate invariably contained factors that contracted smooth muscle and reduced blood pressure. Subsequent samples were less reactive. After the fourth sample the transfusate was physiologically inert. The German investigators estimate that the equivalent of from 0.0005 to 0.0040 mg. of histamine was thus explosively formed or liberated by the transfused lungs. They also are of the opinion that the shock hormone is identical with histamine and are inclined to attribute the occluding bronchoconstriction of guinea-pig anaphylaxis solely to this explosive toxic factor. The amount of histamine demonstrated by their transfusion tests is more than adequate to produce occluding bronchoconstriction in transfused normal guinea-pig lungs.

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[1] Dragstedt, C. A., and [illegible] oc. Soc. Exper. Biol. & Med. **29**: 891 (April [illegible] E.; Dragstedt, C. A., and Mullenix, R. B.: [illegible]

[2] Bartosch, R.; Feldberg, W., and Nagel, E.: Arch. f. d. ges. Physiol. **230**: 129 (May) 1932. The Histamine Factor in Anaphylaxis, editorial, J. A. M. A. **98**: 2143 (June 11) 1932.

[3] Manwaring, W. H., and others: J. Immunol. **10**: 567, 575 (May) 1925.

While a final conclusion as to the importance of explosive histaminemia in human anaphylaxis cannot be drawn from these data, the experimental evidence in favor of the existence of this secondary anaphylactic toxin is conclusive. The nature and method of formation of this toxic factor are presumably quite different from those postulated a quarter of a century ago by Vaughan, Novy and other early supporters of the "anaphylatoxin" theory. Antihistamine therapy, however, becomes a logical procedure in clinical anaphylaxis.

RADIOSENSITIVITY OF CELLS

Although many of the procedures that form the basis of current medical practice were empirical in their conception, subsequent examination of the rationale, in the light of experimental biology, has often amplified their therapeutic and diagnostic value. Following the trend of scientific medicine today, it is likely that a background of evidence from experimental studies will be available in most cases before a mode of treatment is adopted in the clinic. In a recent discussion of radiology by Desjardins,[1] this point of view is emphasized. There is available, he points out, a mass of experimental data dealing with the effect, on cells, of x-rays and radium. On this evidence, radiologists can base clinical procedures. Not only are young cells affected to a greater extent by these types of radiant energy than are old ones but, what is more important from the practical point of view, each functional type of cell has, within limits, a specific range of sensitiveness to radiation. It appears that the variety is a more important factor in its reaction than the normal or pathologic state of the cell.

A comparison of the various types of cells on the basis of their reaction to radiation indicates that lymphocytes are more sensitive than are other types. When the entire body of animals is exposed to x-rays, there is a marked destruction of lymphocytes. This can be observed by examining those organs or tissues in which the lymphocytes are localized. There is a fragmentation and disorganization of the nuclear material, the débris being subsequently removed by phagocytosis. The degree of destruction varies with the exposure; with less intense radiation, some of the lymphocytes escape destruction and there is a slow regeneration of lymphoid tissue. It appears that in all types of cells the changes produced by radium and x-rays are more closely associated with the quantity than with the quality of radiation.

Next to lymphocytes, the cells most severely injured by radium and x-rays are those of the epithelium. The basal epithelium of the salivary glands is especially sensitive, undergoing mucoid degeneration. The cells enlarge and the occlusion of the ducts prevents egress of the saliva, the collection of which produces swelling and tenderness of the glands and dryness in the mouth. Repeated irradiation may even inhibit the secretory function of the glands. Endothelial cells of blood vessels, pleura and peritoneum, connective tissue cells, muscle cells, bone cells and nerve cells are decreasingly affected by radiation in the order named. A biologic response as widespread as that here discussed might well be sufficiently varied to render interpretation difficult. Desjardins points out that the alleged stimulating effect of roentgen and radium rays can be explained either by temporary acceleration of metabolism preceding an inhibition of function and cellular degeneration or by a secondary increase in connective tissue replacing cells that have been destroyed.

The therapeutic value of radiation is explained in some cases by the results obtained with experimental animals. Radium or x-rays exert a favorable influence on many inflammations. The rate of response of acute inflammations is so closely parallel to the known rate of destruction of lymphocytes that the removal of these cells would appear to be the cause of the favorable reaction. Not only is the pain relieved but infection, if present, is effectively combated by the release of antitoxic substances from the destroyed bodies of the infiltrating lymphocytes. The situation is, in general, similar in respect to neoplasms. These are composed largely of normal cells, and the effect of radiation on the tumors agrees closely with that on like cells occurring elsewhere. With accumulation of the necessary information on the response of various types of cells to radium and x-rays, the cellular composition and thus the types of neoplasm can be distinguished by the response to radiation, and treatment planned accordingly. These studies indicate that, based on the histochemical reaction of cells to radiant energy of this kind, the use of radium and x-rays may be extended into further fields of practical application in medicine.

THE SCOT TISSUE QUESTIONNAIRE

In The Journal, July 16, there was published the results of an investigation by the A. M. A. Chemical Laboratory and the Bureau of Investigation of the charges made by the Scott Paper Company that *two* out of three toilet papers of 660 brands tested had been found unsafe and unfit to use. The Journal's article proved conclusively that there was no basis for any such charge. Now the medical profession is being circularized by one Henry Legler, who writes on stationery that carries no name but does have the address Room 1018, at 420 Lexington Avenue, New York City. Inquiry at this room (which appears to be a storage room for the Scott Paper Company's advertising agency) brought the information that Mr. Legler could be found on the eleventh floor. This floor is occupied in its entirety by the advertising agency in question—J. Walter Thompson Co.

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[1] Desjardins, A. U.: The Radiosensitiveness of Cells and Tissues and Some Medical Implications, Science 75: 569 (June 3) 1932.

In the combined letter and questionnaire that Legler sends to physicians, he states that he is "making a study of inferior toilet tissues and their relation to health for the Scott Paper Company." He then asks these questions:

> "1. In your experience have you found that injury to mucous membranes may be caused by inferior toilet papers?
>
> "2. What characteristics in the paper itself would be responsible for these troubles?
>
> Harshness.................. Acidity...............
> Chemical Impurities........ Alkalanity...........
> Other (please specify)..........................
>
> "3. What qualities do you consider most desirable in toilet tissue? ...."

Few physicians indeed have had experience enabling them to express a scientific opinion on either of the first two questions; the latter part of the second question could not be answered by any physician who had not done special research work on the problem submitted. Furthermore, he would require quantitative data as to the chemical ingredients and methods of determining the thresholds of the hazards. The third question, of course, any physician could answer; so could any intelligent layman.

Legler, in addition to his questionnaire, encloses an advertisement of Scot Tissue that has been run in popular magazines; incidentally, the advertisement that was reproduced in miniature in The Journal's article of July 16. It is headed in large type:

> "Science finds Harmful Acids . . . Mercury . . . Arsenic in many brands of Toilet Tissue . . . 660 Brands tested . . . 2 out of 3 found 'Unsafe . . . unfit to use.'"

Then Legler asks, both in a postscript to his letter and as part of the questionnaire, that the physician addressed comment on this advertisement.

Time and again The Journal has commented on the questionnaire nuisance. Advertising agencies, at little more cost to themselves than that of postage, attempt to get from physicians expert testimony that can be used by them in preparing "copy" for their clients. If the facts thus obtained were not grossly distorted and used in an unscientific and even fraudulent way, the imposition might be condoned. Apparently there are some medical men who are so constituted that answering questionnaires of this kind is their favorite indoor sport. Dr. Robert L. Gilman of the Laboratory of Dermatological Research in the School of Medicine of the University of Pennsylvania, who sent in one of Legler's questionnaire letters with the accompanying Scot Tissue advertisement, writes to The Journal:

> "The advertising agencies are at it again. Isn't there some way the complaisant and genial physician can be warned before the toilet tissue people have their ten thousand endorsers?"

The American Tobacco Company got some 18,000 answers—but after all, they sent cartons of cigarets. Where are the samples of toilet paper? Or perhaps this is to be in the nature of a blindfold test!

Current Comment

KOREMLU FAILS

In the department of The Journal devoted to reports by the Bureau of Investigation there appears in this issue a statement relative to the bankruptcy of the manufacturer of the product called Koremlu. The concern that put out this dangerous proprietary depilatory is reported to have gone into bankruptcy with assets of slightly less than $3 and with liabilities approximating two and one-half million dollars. The liabilities are said to consist in large part of a number of damage suits filed by persons who claim to have been seriously harmed through the use of this preparation. The announcement is of special interest as indicating to the public the background that exists for many cosmetic preparations and proprietary medicines. When a purchaser is harmed through the use of a product manufactured by a well established and reputable manufacturer he has at least the assurance of obtaining some mitigation in damages through the established routine of legal procedure. He knows that there exists the possibility of recourse in the courts or the possibility of a cash settlement for damage done. In the case of nostrums and cosmetic preparations manufactured by specialty manufacturers there is little if any possibility of collecting anything. Repeatedly it has been shown that as much as one half to two thirds of the total income of such manufacturers is spent for advertising in order that the products may continue to live, and that practically all the remaining income is distributed almost as soon as it is received. Any one who buys products of unknown composition for application either to the surface or to the interior of the human body in the treatment of human disease is trifling with health and with life. Moreover, he cannot, in the vast majority of cases, hope to recover anything in the way of monetary compensation for damages should harm result.

LIBEL SUITS

The American Medical Association has on occasion been obliged to defend itself against suits for libel entered in response to articles that were published primarily with a view to protecting the public against exploitation by the manufacturers of nostrums and by the promoters of unestablished methods of treatment of cancer, tuberculosis or other diseases. In preparing to defend these suits the American Medical Association has been put to some expense and officers of the Association have devoted to this purpose time and energy that might otherwise have been used for constructive activities. These thoughts are prompted by the fact that William L. White, son of the distinguished William Allen White of the Emporia, Kansas, *Gazette,* recently commented editorially on the way in which the Kansas City *Star* has been compelled to defend itself against suits for libel filed in response to an attempt by the *Star* to inform readers concerning the price of gas in Kansas City. The suits were filed by the head of a public utility criticized in the articles published by the *Star.* In discussing these libel suits, Mr. White said, in part:

> "First he [the head of the public utility who brings the suits] wants $12,000,000 personal heart balm for the rude things the *Star* has said about him, and second the Cities Service Company wants $30,000,000 more for alienation of the affections of the gas consumers, who, but for the *Star,* the company feels, would continue to pay predepression rates for gas and like it.
>
> "Now what has the *Star* gained, in dollars and cents, by refusing to be bluffed? Nothing, so far as the cash drawer is concerned. These suits cost Doherty little additional cash outlay. He already has a high-priced string of lawyers on the payroll, tearing up the turf and feeling their oats from lack of exercise. They might as well be suing the *Star* as eating their heads off in idleness in the paddock. The *Star,* however, must dig down to hire its own string of lawyers, saddled, bridled and equipped to break lances against Mr. Doherty's windmills.
>
> "The fundamental justice of the *Star's* case, the fact that it is conducting a disinterested fight for lower gas rates, will do nothing to reduce its cash outlay in defending itself.
>
> "Speaking broadly and generally and with no reference to the *Star* and Doherty from the point of view of the cash register, this business of fighting the public's battles against high and exorbitant utility rates, instead of letting them fry in their own grease, isn't much of a job. The hours are long in the Don Quixote business, the pay is uncertain and working conditions are frankly lousy. But it's a steady job, and the *Star* has been plugging away at it for lo these 50 years."

The last paragraph is quite apropos to the campaign against exploitation of the public in the field of medicine that The Journal has been undertaking continuously for the last thirty years. The job is a never-ending one, for the gullibility of the public in matters medical seems unfathomable. Yet so long as the state—using the term in its broadest sense—fails to protect the public in this field, the organized medical profession has a moral obligation in the matter.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

August 1. The Committee on Foods.
August 3. The Stethoscope.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11, over Station WBBM.

The subject for the week is as follows:

August 6. Shall I Send My Child To Camp?

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Fluorides in Water Supplies.—The state department of health reports in its bulletin that an investigation of fluorides in water supplies as the possible cause of mottled enamel of the teeth was continued during May. In a locality in the San Joaquin Valley it was found that fluorides were absent during the winter but, with the falling of the water tables, fluorides are found in increased amounts. Fluorides in high amounts were found in a new well which has been sunk in one of the southern coast cities. Because of the results that have been discovered already in this investigation, the bulletin states, it has been suggested to the U. S. Biological Survey that the fluoride test be established as a routine in the chemical analysis of water supplies.

San Francisco Regulates Clinics and Dispensaries.—An ordinance recently adopted by the city and county of San Francisco makes it unlawful to operate a clinic or dispensary without first obtaining a permit and license from the director of public health. A clinic or dispensary is defined as a person, place, establishment, corporation, institution, association, or agent whose purpose it is to furnish to any person, nonresident or ambulatory, in such clinic, either with or without charge, medical, surgical or dental treatment or advice, or medicine or apparatus, or drugless healing or manipulation, or mental and habit advice and treatment, including psychiatric and neurological advice, mental healing and faith cures of all types. The private practice of the healing art is exempted from the provisions of the ordinance. Minimum standards for the establishment and operation of clinics may be set up by the director of public health. Application for a permit must be in writing and must state the location or proposed location of the clinic, the purpose for which it is to be conducted, the accommodations for patients which it is to contain, the nature and kind of treatment to be given, the names and addresses of the person or persons making the application, and the names and qualifications of the person or persons who are to conduct the clinic or dispensary. If the director of public health finds after investigation that the clinic or dispensary will afford proper accommodations for patients and that the person or persons responsible for the maintenance and conduct of the clinic and the persons who are to conduct it fulfil the requirements of the ordinance, he is to issue the desired permit. Every licensed clinic and dispensary is to pay a fee of $6 per quarter. The director, or an authorized assistant, may at any time visit and inspect a licensed dispensary or clinic. He may, if public interest demands, and for just and reasonable cause, revoke a license. Any one violating the provisions of the ordinance or any person or persons obtaining medical or surgical care or other treatment from a licensed dispensary or clinic on false representation is subject to a fine of not less than $10 and not more than $200.

CONNECTICUT

Eighth Clinical Congress.—The Connecticut State Medical Society will hold its eighth clinical congress in New Haven, September 26-28. Meetings will be held in the Sterling Hall of Medicine and the New Haven Hospital. A registration fee of $5 is required. An advance program includes the following speakers: Drs. Henry K. Pancoast, Philadelphia, on "Pulmonary Disease Associated with Dust Inhalation"; Joseph C. Aub, Boston, "Metallic Poisoning"; Harrison S. Martland, Newark, "Radium Poisoning in Industry"; Francis C. Grant, Philadelphia, "Treatment of Traumatic Disorders of the Nervous System"; Theodore H. Weisenburg, Philadelphia, "Modern Methods of Neurological Diagnosis," and Lewellys F. Barker, Baltimore, "Commoner Functional Disorders of the Nervous System." A session on cancer will be addressed by Drs. Robert B. Greenough and William P. Graves of Boston; Fred W. Stewart, New York, and Henry Schmitz, Chicago. Round table discussions will be held, and there will be demonstrations in the sections of industrial medicine, cancer and diseases of the nervous system. Dr. James Ewing, New York, will address a public meeting on "Etiology of Cancer," and Dr. George H. Bigelow, Boston, the same session, on "Cancer as a Social Problem."

ILLINOIS

Personal.—Dr. William D. Hohmann recently gave his medical library of 500 books to St. Francis Hospital, Kewanee.——Dr. Harry O. Veach has been appointed medical examiner of the Veterans' Administration in Kewanee.

Certificates Redeemable in Hospital Service.—What was said to be a unique plan for raising funds was carried out recently by the Highland Park Hospital, Highland Park. Certificates redeemable in hospital service were placed on sale in an attempt to raise funds necessary to continue operation of the institution. Many of the certificates may not be utilized, it was said, but purchasers of them will be assured hospital care should an emergency arise.

Chicago

Fatal Case of Psittacosis.—The death of one woman and the serious illness of two others was disclosed by the board of health, July 21, according to the Chicago *Tribune*. The woman, who died July 6, bought a pair of parrakeets from a pedler, June 18. Shortly before she became ill she was visited by two friends and they contracted the disease.

Personal.—Frank R. Lillie, Ph.D., dean of the Division of Biological Sciences, University of Chicago, was given the honorary degree of doctor of science by Yale University, June 22.——Dr. Clifford J. Barborka recently received the honorary degree of doctor of science from Simpson College, Indianola, Iowa. He gave the commencement address at this time.

Society News.—Dr. Bertha Van Hoosen gave an address at the Navy Pier, July 26, on "Self Control," which was one in a health series given by physician members of the Chicago Woman's Club during July and August.——Officers elected at the annual meeting of the Chicago Urological Society, May 25, are: president, Dr. Gustav Kolischer; vice president, Dr. Benjamin E. Fillis, and secretary, Dr. Leslie L. Veseen.

IOWA

Society News.—Dr. Adam Weaver, Cumberland, addressed the Cass County Medical Society in Griswold, June 14, on "Carpal Fractures and Their Significance."——Speakers before the Jackson County Medical Society, June 9, were Drs. Anthony C. Pfohl, Iowa City, on "Acute Intestinal Obstruction"; John F. Ritter, Maquoketa, serum therapy, and Nathaniel G. Alcock, Iowa City, "Transurethral Prostatectomy."——A recent meeting of the Muscatine County Medical Society was addressed by Dr. Frederick H. Lamb, Davenport, on "Blood Picture and Certain Related Clinical Implications."——Dr. Arthur W. Erskine, Cedar Rapids, spoke before the Scott County Medical Society, June 7, on "The Graham-Cole Test."——At the meeting of the Four County Medical Society, Cherokee, June 14, Dr. Martin J. Joynt, LeMars, among others, talked on "Observations on Post-Tonsillectomy Patients."——A symposium on arthritis constituted the afternoon program of the Upper Des Moines Medical Society at Lake Okodoji, June 21.

KENTUCKY

Obstetrics in the Mountains.—Results of a study of the first thousand maternity patients among Kentucky mountain women cared for by the Frontier Nursing Service have recently been announced. Puerperal abnormalities developed in 287 women, or 29 per cent, and in 130 cases a physician was called. Eclampsia developed in 2, although 172 had toxic symptoms. Delivery complications occurred in 366 cases; forceps were used nine times. Two deaths occurred, one caused by chronic heart and kidney disease, the other by heart disease. Twenty-six stillbirths occurred among 1,015 babies and twenty-five died within a month after birth. Of the thousand women, 96 per cent were reported to be in satisfactory condition one month after delivery. The Frontier Nursing Service is a volunteer service to citizens of the Kentucky mountains, directed by Mrs. Mary Breckenridge of Kentucky and New York.

LOUISIANA

Society News.—Through the efforts of Dr. Daniel N. Silverman, New Orleans, the Second District Medical Society was recently organized. The name of Dr. Silverman was inadvertently omitted from the item in The Journal, July 9, page 140.——Dr. Oscar W. Bethea, New Orleans, addressed the Seventh District Medical Society, June 16, at Lake Charles, on angina pectoris.

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended July 16, indicate that the highest mortality rate (23.1) appears for New Orleans, and the rate for the group of cities as a whole, 10.1. The mortality rate for New Orleans for the corresponding week last year was 15.3, and for the group of cities, 10.3. The annual rate for eighty-five cities for the twenty-eight weeks of 1932 was 11.8, as against a rate of 12.7 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

MARYLAND

Clinics for Crippled Children.—Fifty-five children were treated at Salisbury and Snow Hill recently, when clinics were conducted by the Maryland League for Children on the Eastern Shore. Dr. Albertus Cotton, professor of orthopedic surgery and [illegible]sity of Maryland School of Medicine and [illegible] and Surgeons, Baltimore, directed the work. It is planned to hold clinics at Chestertown and in Charles and St. Mary's counties.

Tour of the Healthmobile.—Child health conferences will be held in more than sixty places in southern Maryland and on the eastern shore during the summer tour of the healthmobile of the bureau of child hygiene, state department of health. The "health bus," which stopped in St. Mary's County until July 15, was located in Charles County, July 18-29. The provisional schedule for the remainder of the season will be Calvert County, August 1-12; Kent County, August 15-24; Queen Anne's County, last week in August, and Somerset County, September 6-15. The arrangements at each place are being made by the county health officer and the public health nurse. The staff of the healthmobile includes a physician who has had special training in the care of infants and young children, and a dentist. The car is equipped with things needed for a complete physical examination, including a dental chair and dental appliances. Health films are shown in the evenings. The aim of these conferences is to show mothers how to keep their children well. No medical treatments are given. Children in need of medical care are referred to their own physicians. Last year more than 2,000 children were brought to the conferences held in connection with the visits of the healthmobile to the same counties, and more than 1,100 were given dental care.

MASSACHUSETTS

Prize as a Memorial.—Harvard University is bequeathed a fund of $20,000 by the will of the late Mrs. Frida Adler, widow of Dr. Isaac Adler, New York, to establish a triennial prize in his name for research in medical or allied sciences. Dr. Adler was professor of clinical pathology at New York Polyclinic Medical School.

Personal.—Boston University conferred the honorary degree of doctor of science on Drs. Frank B. Mallory, professor of pathology, Harvard University Medical School, and William P. Graves, W. H. Baker professor of gynecology, Harvard University Medical School.——Dr. Charles Stanley Raymond, Boston, assistant commissioner, state department of mental diseases, has been appointed superintendent of the Wrentham (Mass.) State School.

Smallpox in Fitchburg.—Only three in a total of sixty cases occurring early in 1932 in Fitchburg, were among vaccinated persons, and none of the three had been vaccinated within the last forty-five years. The sixty cases occurred among immigrants or children of immigrants from Canada, and all but two from the province of New Brunswick. Fifty-six of the cases occurred in a section of the city called Cleghorn, which is populated largely by French Canadians. According to the *New England Journal of Medicine*, this part of the city was the least protected by previous vaccination, about 22 per cent being unvaccinated. Within five days, 40,000 people were vaccinated or revaccinated.

Licenses Restored, Revoked and Suspended.—At a special meeting, June 23, of the board of registration in medicine, the licenses of Drs. Joseph N. Tessier, New Bedford, and Louis A. Hermann, Brookline, were restored. Dr. Tessier's license had been revoked, Dec. 16, 1926, on account of abortion, and that of Dr. Hermann, Nov. 16, 1916, for violation of the Harrison Narcotic Act. The license of Dr. Dixie G. Hoyt, Leominster, was revoked at this meeting because of his court conviction on the charge of performing an illegal operation. The license of Dr. Frank Steele Garrett, Chelsea, was suspended. Dr. Garrett has been admitted to the Danvers State Hospital. The board suspended the license of Dr. Carlos Mata, Boston, for one month ending July 25, for deceit in the practice of his profession.

MICHIGAN

Golf Match Between Seniors and Juniors.—The Seniors, an organization composed of members of the Wayne County Medical Society, Detroit, who have been in active practice for twenty-five years or longer, has accepted a challenge from the Noon Day Study Club, physicians under the age of 40, for a golf match at Meadowbrook Golf Club, August 3. It is anticipated that at least twenty-five matches will be arranged, the losers to pay for the winners' dinners.

Hospital News.—The new $300,000 hospital at the Michigan Farm Colony for Epileptics at Wahjamega was opened, July 8. One hundred patients were expected to have been accommodated by the new two story structure by July 15.——A gift of $25,000 was recently presented to Harper Hospital Cancer Clinic by Mrs. Hetty Speck, Grosse Pointe, to be used for the purchase of radium. A room in the clinic will henceforth be known as the Speck Room.

MISSOURI

Tuberculosis Day.—August 17 has been set aside as Tuberculosis Day, when the people of the city and county of St. Louis will be asked to assist the Tuberculosis and Health Society in its campaign for funds to finance the health work through the coming fall and winter. The main event in the day's program of entertainment at Sportsman's Park will be a regular National League baseball game between the St. Louis Cardinals and Philadelphia. This year will mark the eighteenth time that Tuberculosis Day has been observed, and the fifteenth time that the Cardinals have participated in the charity. Although the main purpose of the the game is to raise money, it was reported, the celebration reminds people of the organized fight against tuberculosis and impresses on them the need for a constant, well planned program to combat the disease.

MONTANA

State Medical Election.—Dr. John R. E. Sievers, Butte, was installed as president of the Medical Association of Montana at its recent annual meeting in Miles City. Dr. Byron L. Pampel, Livingston, was named president-elect. Dr. John A. Evert, Glendive, was elected vice president, and Dr. Elmer G. Balsam, Billings, reelected secretary. The next annual meeting of the association will be held in Anaconda.

NEBRASKA

Dinner to Dr. Phillips.—Dr. and Mrs. Clark L. Phillips, Dixon, were given a farewell dinner, June 27, by members of the Northeast Nebraska Medical Association. Dr. Phillips, who has been a member of the society for almost twenty years, is a past president of the organization. He and his wife were presented with a silver and gold sugar and creamer set. They left for Superior, June 30, where Dr. Phillips plans to engage in practice. Among those in attendance at the dinner, which was given at the home of Dr. John D. Lutton, Laurel, was Dr. Arthur E. Cook, Randolph, president, state medical society.

NEW HAMPSHIRE

Inspection of Tourist Camps.—Since April 13, when the new code of regulations governing the sanitation of tourist camps, tourist homes, tea rooms, hotels and inns and other roadside places became effective, up to July 1, a total of 616 inspections have been reported. Of this number, 456 were of places eligible under the regulations to display the official sign. A number of places, classable in other respects as excellent, have been debarred from accreditation because of the water supply being conducted through lead pipe. Deficiences found in the current inspection include: failure to have water supply analyzed; well or spring not adequately protected; use of unchlorinated lake or brook water; no water supply on grounds; bottled milk law not observed; cabins too small or not screened; poor beds and insanitary swimming pool.

NEW JERSEY

The Certification of Specialists.—Following the recent adoption of a plan by the house of delegates of the Medical Society of New Jersey, the organization of a state committee on credentials for accrediting members for special practice has been approved. Dr. John F. Hagerty, Newark, past president, state medical society, was selected to serve as chairman of the committee for the first year, which is expected to begin in October. To be recognized as a specialist, a member must present his request to the local society. If this organization approves, the request is endorsed and passed up to the state society for action. There shall be no county or state machinery set up for examination of a man's scientific attainments. Certification of national examining boards will have value in association with the local consideration of his personal qualifications other than scientific, and members failing to satisfy the committees otherwise as to scientific attainments will be referred to such examining boards. If rejected, the applicant has the power to appeal. Decisions of the state committee on these appeals shall be final unless otherwise determined by the trustees or house of delegates of the state society. The following qualifications of applicants wishing to be designated as a specialist will be considered:

1. Acquaintanceship with, and recognition by, his professional associates as an honest, conscientious and ethical physician.
2. Fellowship in the American College of Surgeons or the American College of Physicians; a diploma from one of the National Examining Boards—ophthalmology, otolaryngology, obstetrics and gynecology; membership in the American College of Radiology or the Radiologic Society of North America, or membership in the American Psychiatric Society.
3. Members of the Medical Society of New Jersey holding appointments on a hospital service, in a special branch of medicine or surgery or any of the recognized specialties, whose service is sufficiently active to afford attainment of a high degree of proficiency, and the duration of whose appointment has been at least five years.
4. Those who may later receive, from recognized colleges or other teaching institutions, certificates showing completion of graduate courses of instruction leading to the degree of "master" in any branch of medicine or surgery.
5. Evidence of continuous, active, successive practice during at least ten years, marked by study, travel, active membership in medical societies, and proof of special ability in their chosen fields of practice.

A suitable certificate, carrying the seal of the state medical society and subscribed to by the committee on credentials, will be presented to the approved applicant at the annual meeting of the society. To defray the cost of certification, a charge of $25 shall be made, payable before the certificate of qualification as a specialist is issued. The state society reserves the right to revoke any certificate issued, on proof being shown that fraud or misrepresentation was used in obtaining certification.

NEW YORK

New York City

District Branch Society Takes Up Golf.—For the first time, the Second District Branch Medical Society had an outing meeting, June 8, at the Lawrence Country Club. The county societies of Kings, Nassau, Queens and Suffolk, with a membership of more than 3,200 physicians, were represented by more than 80 members. The Medical Society of the County of Queens was host. Kings County won the cup, which will be played for each year. It was provided by the branch society, to be awarded to the county society presenting the best average score. Individual prizes also were presented. The toastmaster was the president of the Queens society. At this outing, two members of the branch society who graduated in medicine in 1893 met for the first time since their graduation.

Campaign Against Illegal Practitioners.—Twelve alleged illegal practitioners are reported to have been held for trial in the court of special sessions in a recent drive carried on under the direction of Dr. Harold L. Rypins, Albany, secretary, state board of medical examiners, and Deputy Attorney General Sol Ullman. Among those who were detained are a high school student, Norris F. Roach, charged with distributing a German "pep" compound; "Bishop" F. S. Green, "who operates the Temple of Progressive Spiritualists, Inc., and manufactures a cure-all," and Larat Chari Nandi, who operates "the Hindu Products Manufacturing Corporation and distributes an ointment called the Hindu balm and the Hindu life-builder." Another operates under the name of the "American Indian Trading Post" and produces a concoction for the special treatment of lung infections, according to the newspaper report.

Dr. Graham Lusk Is Dead.—Graham Lusk, for more than twenty years professor of physiology at Cornell University Medical College, aged 66, died, July 19, in a hospital where he had been ill about a week. Dr. Lusk graduated from Columbia University in 1887. He received the degree of doctor of philosophy from the University of Munich in 1891 and an honorary degree of doctor of medicine from the same institution in 1929. Yale University conferred the honorary degree of master of arts in 1896 and the doctor of science degree in 1909, and the University of Glasgow the degree of doctor of laws in 1923. Dr. Lusk held teaching positions in physiology at Yale University from 1891 to 1898. In that year he became associated with University and Bellevue Hospital Medical College. Since 1909 he had been professor of physiology at Cornell University Medical College. Dr. Lusk was an authority on nutrition. He was the author of "Elements of the Science of Nutrition" and "Fundamental Basis of Nutrition." He was a member of several international food commissions, including the Inter-Allied Scientific Food Commission, 1918. He was scientific director of the Russell Sage Institute of Pathology, and an Associate Fellow of the American Medical Association.

OHIO

Personal.—Dr. George D. Blume has been appointed city physician of Portsmouth.——Dr. and Mrs. John B. May, New Holland, recently celebrated their sixtieth wedding anniversary. Dr. May, who is 90 years of age, is president emeritus of the Pickaway County Medical Society. He recently retired after fifty-seven years of practice.——Announcement has been made of the appointment of Dr. William P. Johnson, Columbus, as chief of the bureau for prevention of blindness, state department of health, and Dr. Reaves W. DeCrow, Portsmouth, of the bureau for the control of venereal diseases.——Dr. Robert T. Leever, South Charleston, has been chosen public health commissioner of Pike County.

Principles of Admissions to Dispensaries.—The Academy of Medicine of Cleveland, after six months of conference with social agencies of the city, has announced the following principles of admission to dispensaries:

(*a*) All social agency workers agree to refer all cases which at one time or another have been under the care of a private physician back to that physician. No time limit is set to this principle.

(*b*) It is agreed that all other persons who now or ultimately might be able to pay something should be referred by the social worker to a neighborhood physician.

(*c*) The outpatient departments of all the hospitals agree, through their social service departments, to follow the two courses of action outlined above.

The new plan, which is to be applied only to new admissions, will be administered by a central committee representing the major groups involved. The academy will compile lists of physicians for the agencies, which will ask the patient to select a physician when he has no personal medical adviser. The physician to whom such a patient is referred will then (1) treat the patient for an agreed fee, (2) treat him free or on a deferred payment basis, or (3) refer him to a dispensary. Dispensaries receiving patients will report them to the central committee, which will maintain records and reports.

RHODE ISLAND

Dr. Messinger Awarded Fiske Fund Prize.—Dr. Harry C. Messinger, Providence, was given the annual Fiske Fund Premium for his dissertation on "The Value of Ocular Signs and Symtoms in the Diagnosis of General Disease." This fund was established nearly 100 years ago by Caleb Fiske, with the idea of encouraging original work on the part of members of the society, of which he was one of the early presidents.

SOUTH CAROLINA

Personal.—Dr. James R. Young, Anderson, president of the South Carolina Medical Association, and Mrs. Frank P. Wrenn, Anderson, president of the state women's auxiliary, were guests of honor at a banquet given by the Anderson County Medical Society, June 8.——Dr. John H. Crooks, Atlanta, Ga., has been appointed health officer of Lexington County, to succeed Dr. Martin B. Woodward, who has been transferred to Aiken County. Dr. Woodward in turn succeeds Dr. William G. Bodie, who resigned because of ill health.——Dr. Hugh B. Senn, formerly of Beaufort, has been appointed health officer for Newberry County, succeeding Dr. Henry G. Callison.

VIRGINIA

University News.—The second postgraduate clinic for Negro physicans at the Medical College of Virginia was held, June 20-July 2, at St. Philip Hospital, a unit of the hospital division of the college. The work includes instruction in medicine, pediatrics, obstetrics, surgery, dermatology and clinical pathology.

Personal.—Dr. Irl C. Riggin, executive director of the American Heart Association for several years, with headquarters in New York, has been appointed director of county health work in Virginia. Dr. Riggin, who was formerly connected with health work in the state, succeeds Dr. Harry G. Grant, who resigned in June to become dean of the Dalhousie University School of Medicine, Halifax, Nova Scotia.

Second Course in Prenatal Care.—The area surrounding Richmond and Farmville has been chosen for the second circuit of courses in prenatal and postnatal care, which have recently been inaugurated as a part of the graduate work of the Medical Society of Virginia. The centers tentatively selected, subject to the approval of the local medical societies, are Richmond, Petersburg, Hopewell, Lawrenceville and Farmville. The work will be carried on from August 22 to October 28. An intensive course is being planned on the Eastern Shore, August 8-19. Two additional circuits of five centers are being arranged for the fall and winter months. The localities have not been selected.

WISCONSIN

Child Health Centers.—Cooperating with the bureau of child welfare of the state board of health, the local auxiliary of the American Legion has been sponsoring child health centers in Polk County. Physical examinations are conducted at these centers for all children of preschool age, and expectant mothers are urged to attend for prenatal care. Centers were held in Burnett County, Grantsburg and Osceola.

Traveling Clinic Carries on Diphtheria Campaign.—A two months' campaign against diphtheria began, July 6, when a motor bus began its tour of Milwaukee, supplementing the work of regular child welfare stations and clinics established on playgrounds, in parks, schools and churches. The bus was obtained through the cooperation of the Milwaukee Cooperative Milk Producers' Association and is equipped with physicians, nurses and supplies. The traveling clinic will visit each of the fifty-nine stations in the city twice during the campaign.

GENERAL

Association for Study of Paradentosis Organized.—Representatives of Germany, France and Switzerland organized an international association for the study of paradentosis, May 30, at a meeting at Frankfort-on-Main. This association, which plans to facilitate the exchange of ideas on paradentosis, has for its objectives the initiation of confrères into the study of paradentosis, which must be considered as of the same degree of importance as dental caries; the stimulation of a more intimate cooperation between internal medicine and odontology, and the study of paradentosis from the standpoint of its recognition by social agencies (in those countries which are interested in this phase of the question). For the present, the association will not publish its own journal but will arrange for the appearance of material on this subject in local dental journals. Meetings of the group will be presided over in rotation by each of the countries represented, the president to be named at the annual session. The first annual assembly of the international association for the study of paradentosis will be held at the University of Zurich, August 7. It is planned to form local national committees in various countries. Steps toward this end have already been taken in the United States. Those interested should communicate with Dr. Hermann Becks, George Williams Hooper Foundation for Medical Research, Second and Parnassus avenues, San Francisco. The general secretaryship of the international organization, represented by Jaccard and Held, has its headquarters at Geneva. It will have charge of collecting all articles relating to paradentosis and of indexing them.

League for Rehabilitation of Speech.—A plan for developing regional organizations in the field of disorders of speech, to be called the National League for the Rehabilitation of Speech, was created at the annual meeting of the American Society for the Study of Disorders of Speech in Detroit, Dec. 30-31, 1931. Since then, two regional leagues for the rehabilitation of speech have been organized: the Pacific League, for the far west, and the Central League for the central states. Two municipal units of the national league have been formed, one in St. Louis with Dr. Max A. Goldstein as chairman, and one in New York with Dr. Smiley Blanton as chairman. All regional leagues will meet jointly with the American Society for the Study of Disorders of Speech at its annual convention which this year will be held in St. Louis, November 25-26. Membership in the national league is open to any person who pays dues, which will include a subscription to a periodical in disorders of speech which the society plans to publish. In order to maintain high standards of scientific work for the league, the resolution which created it provides that, for the present, regional officers should be members of both the society and the league. The American Society for the Study of Disorders of Speech was inaugurated at the annual meeting of the National Association of Teachers of Speech at Chicago in December, 1926. Its objectives are to assume leadership toward the development of a strong national movement for the treatment of disorders of speech and to encourage cooperatively the development of knowledge in this field. Dr. Elmer L. Kenyon, Chicago, is president of the American society, and Mr. Samuel A. Robbins, Boston, secretary.

Western Urologists Meet.—The Western Branch Society of the American Urological Association held its eighth annual meeting in Portland, Ore., July 1-2. Guest speakers and their subjects were Drs. William E. Lower, Cleveland, "A Discussion of the Prostate Problem"; Ernest Granville Crabtree, Boston, "A Consideration of the Functional Result of Surgery"; William P. Herbst, Minneapolis, "Practical Application and Value of Pyeloscopy," and Rex E. Van Duzen, Dallas, Texas, "Résumé of Six Years' Study of Cystoceles." Officers elected were: Drs. Frank S. Dillingham, Los Angeles, president-elect; and George W. Hartman, San Francisco, secretary. Dr. Archibald W. Hunter, Vancouver, B. C., became president.

Southern Pediatric Seminar.—The twelfth session of the Southern Pediatric Seminar is being held, July 25-August 6, in Saluda, N. C. Included on the program are Drs. Wilburt C. Davison, dean, Duke University School of Medicine; Horton R. Casparis, Nashville, Tenn., professor of pediatrics, Vanderbilt University School of Medicine; Oren Moore, Charlotte, N. C.; Edgar A. Hines, Seneca, secretary, South Carolina Medical Association; Stewart H. Welch, Birmingham, Ala.; Philip F. Barbour, Louisville, clinical professor of pediatrics, University of Louisville Medical School; William L. Funkhouser, associate professor of pediatrics and chairman of the department, Emory University School of Medicine, Atlanta, and William A. Mulherin, clinical professor of pediatrics, University of Georgia Medical Department, Augusta. The Southern Pediatric Seminar is a graduate summer course in methods of diagnosis, prevention and treatment of diseases of children and is designed especially for the general practitioner. It is conducted by a group of Southern pediatricians who have volunteered their services to create a teaching center where the latest developments in this branch of medicine may be presented. A fee of $25 is charged to keep the seminar on a self-supporting basis. All the lecturers and instructors are serving not only without compensation but at their own expense. Further information may be had from the registrar, Dr. D. Lesesne Smith, Infants' and Children's Sanitarium, Saluda, N. C.

CANADA

Personal.—Prof. Alexander Galloway of the department of anatomy, University of Saskatchewan School of Medicine, Saskatoon, has been appointed professor of anatomy at the University of Witwatersrand, Johannesburg, South Africa. ——Dr. William E. Waugh, bursar and for many years a member of the teaching staff of the University of Western Ontario, London, was recently the guest of honor at a dinner celebrating the sixtieth anniversary of his graduation from McGill University School of Medicine, Montreal. The university, the city of London, fellow physicians and former students joined in the tribute.——Dr. William Warwick, St. John, N. B., was elected president of the Canadian Public Health Association at the recent annual meeting in Toronto. Dr. Warwick was appointed chief medical officer of health of New Brunswick on the resignation of Dr. George G. Melvin, Fredericton, who has since died.——Dr. Francis X. McPhillips, Vancouver, said to be the senior practicing physician in British Columbia, was the guest of honor at a dinner given by the nuns of St. Paul's Hospital, June 15, marking his retirement from the staff. He has been identified with the institution since its beginning in 1893.

CORRECTIONS

The Treatment of Skin Diseases by Physical Therapeutic Methods.—In the article by Dr. George Miller MacKee (The Journal, May 7, p. 1646) footnote 1 at the bottom of page 1653, second column, incorrectly refers to the *New York Medical Journal and Record* for Aug. 20, 1931, whereas the periodical referred to is the *Medical Journal and Record* Sept. 2 and 16, 1931.

Diabetic Coma with Blood Sugars Above One Thousand Milligrams.—In the clinical note by Drs. Charles J. Haines and Reuben Davis (The Journal, July 2, p. 24) the treatment in case 2 consisted of external heat, gastric lavage with 2 per cent sodium bicarbonate, soap suds enemas, hypodermoclysis of 1,000 cc. of 2 [instead of 5] per cent sodium bicarbonate and 1,000 cc. of physiologic solution of sodium chloride, with 500 cc. of 2 [instead of 5] per cent sodium bicarbonate and 20 Gm. of dextrose by proctoclysis. Incidentally the address of the authors, at the end of the article, should be 1315, instead of 803, Pine Street.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 2, 1932.

Maternal Mortality Undiminished

A fact causing much concern is that, while infant and general mortality have much declined, maternal mortality, despite the introduction of antenatal care, shows no decline. It is thirty years since the routine supervision of the expectant mother, normal as well as abnormal, was introduced by the late Dr. J. W. Ballantyne of Edinburgh. The widespread establishment of antenatal clinics has been one of the most important advances of preventive medicine of recent years. Dr. F. J. Browne, professor of obstetric medicine in the University of London and director of the obstetric unit of University College Hospital, in a paper on maternal mortality contributed to the *Lancet*, points out that while in 1911 the puerperal mortality was 3.87 per thousand live births, in 1930 it was 4.40 and that the figures for puerperal sepsis mortality were, respectively, 1.43 and 1.92. The mortality from eclampsia has not declined. Investigating the causes of this persistent high mortality, Professor Browne examined thirty-three reports of nine maternity hospitals of the highest standing in order to find the causes of death among women who had received antenatal care and the frequency of eclampsia among them. His conclusions are as follows: 1. Antenatal care cannot appreciably influence the frequency of death from postpartum hemorrhage or shock after easy uncomplicated labor, which accounted for 1 in 5 of the 173 deaths examined. 2. The incidence of complicated and obstructed labor from disproportion and similar causes is being diminished. But a good many cases are still unprevented and the discovery of others often leads to induction of premature labor and cesarean section. Professor Browne thinks that much of the interference is unnecessary and constitutes meddlesome midwifery. The figures show that instrumental induction of labor accounted for 8 deaths out of 173, even in the best surroundings and in well organized hospitals staffed by experts. He also thinks that cesarean section is often done unnecessarily and can be dangerous, even in clean cases in the best surroundings and with expert skill, as is shown by the fact that it accounted for 18 deaths out of the 173. "Women are saved from obstructed labor only to run the possibly less, but still considerable, risk of induction of labor and cesarean section. In possibly a quarter of such cases the operations were unnecessary." 3. Antenatal care can do little or nothing to prevent such frequent causes of death as antepartum hemorrhage, which accounted for 1 in 10 of all the deaths. Possibly more might be done by taking note of slight warning hemorrhages and admitting the patient immediately to the hospital. 4. In one seventh of the cases the causes were such as antenatal care could not prevent—rupture of the aorta in the second stage, cancer of the cervix, and influenzal bronchopneumonia. 5. Clinics are not doing all they might to prevent eclampsia. The defects are failure to estimate blood pressure, insufficiently frequent return visits, insufficient realization of the importance of edema as a premonitory sign, and delay in instituting adequate treatment.

Milk Consumption in the Great Cities

The Empire Marketing Board (an organization formed to promote trade within the British Empire), in publishing a report entitled "Milk Price Margins," states that the per capita consumption of milk, excluding cream, is lowest in London, Paris and Berlin. Each Parisian drinks about one-third pint of milk a day, and each Berliner two-fifths pint. In London the consumption is about midway between these two. The consumption of milk is highest in New York, Copenhagen and Hamburg.

The New Yorker drinks about a pint of milk a day, the citizen of Hamburg about four-fifths pint and the citizen of Copenhagen three-fourths pint.

Effects of Boresome Occupations on Health

In the annual report of the chief inspector of factories, the senior medical inspector, Dr. J. C. Bridge, calls attention to the beneficial effect of manual work on mind and body and emphasizes the *importance of maintaining interest in work.* He describes the uninterested worker as an industrial invalid. The pleasure of the craftsman is being crushed by the steady increase in mechanized processes, the result of which is seen in the tendency to a rise in sickness rates for what are termed "nervous disabilities" for want of a better name. Repetition undoubtedly creates a weariness not expressed in physical terms but in a desire by the worker for temporary relief from the enforced boredom of occuption in which the mind is left partially or entirely unoccupied. This fact must be recognized for the understanding of sickness records and absenteeism in the industrial population. Vastly more days are being lost from vague, ill defined but no doubt real disability due to ennui than from all the recognized diseases together. How is this problem to be dealt with? More interest in processes that are themselves dull must be created. Piece instead of time rates, promotion for efficiency, bonuses of holidays for unbroken time, and rest periods with change of posture and attention are a few of the suggestions for this growing problem.

PARIS

(From Our Regular Correspondent)

June 22, 1932.

Annual Meeting of the Pediatric Society

At the annual meeting of the Société de pédiatrie, held in the Hôpital des enfants malades, in Paris, under the chairmanship of Professor Lereboullet, the chief topic on the program was "Pulmonary Suppurations in the Child." Mr. Jean Hutinel considered abscesses due to pneumococcus infection and showed, in three cases, their spontaneous tendency to heal, which justifies delay. Nobécourt, Duhem and Kaplan reported an observation of the same kind. Lesné and R. Clément cited a case of recovery from lung abscess due to spontaneous pneumothorax. Le Mée, André Bloch and Soulas discussed the etiology and pathogenesis of lung abscesses; also the part played by the introduction of blood into the bronchi during tonsillectomy and mastoid trephination, basing their presentation on the researches of Mayerson. Le Mée considered the question as to whether it is better not to anesthetize a child completely, in order to preserve the cough reflex. In 20,000 tonsillectomies, he has not observed a single case of pulmonary abscess. André Bloch pointed out the good effects of the use of bronchoscopy on the evolution of pulmonary suppurations by facilitating drainage. Mr. Yselin described the indications for surgical intervention. He considered it better to wait two months before intervening, by treating with postural drainage and broncho-aspiration. He stressed the frequency of purulent pleurisy associated with lung abscesses. If pleurotomy is carried out too early, pneumothorax drives back the abscess into the deeper tissues and makes it inaccessible. If purulent pleurisy is treated on the principle of a waiting policy, there is no danger of pneumothorax developing, and the abscess heals spontaneously after it is opened into the pleura.

There were several communications on other subjects. Mr. Apert described a case of stenosis of the pulmonary artery. Mr. Astier cited a case of recovery from colipyuria due to Vincent's anticolibacillary serum. Blechmann and Montlaur spoke on infantile acrodynia. Mr. Mouriquand of Lyons presented a communication on rickets in which he distinguished two clinical forms, florid rickets, which heals readily, sometimes as a result of changes in hygiene, or by ultraviolet rays and viosterol; the second, hypotrophic rickets, in which all forms of treatment often remain ineffective. Professor Marfan holds also that rickets is a disease of variable forms. Mr. Lesné added that, in order to cure rickets, action should be taken while the child is still in the period of bone growth.

Treatment for Poisoning from Mushrooms

H. Limousin and G. Petit have proposed a new form of treatment for intoxication by Amanita phalloides, based on experiments made by one of them. The rabbit eats this mushroom without harm but may be killed by the subcutaneous injection of a weak dose of the juice of the mushroom. The rabbit has not, therefore, a complete organic immunity, but the toxin is neutralized in the digestive tract. Experiments performed on the cat, an animal highly sensitive to phalloid intoxication, have shown that a hepatotoxic toxin is neutralized by the ingestion of rabbit's stomach, but that there is another toxin (neurotoxin) against which the neuraxis of the rabbit is naturally immunized and which may be neutralized in the cat by the brain of the rabbit. A comparative study of two groups of intoxicated persons has shown that the mixture of the stomach and the brain of the rabbit, in a fresh and ground state, has the same neutralizing potency in man that it has in the cat. In all cases reported by Limousin and Petit, this method proved completely successful, even in a case in which the therapeutic intervention was late; that is to say, three days after the toxic meal. The mixture used consisted of seven brains and three stomachs of rabbits freshly killed, the material being chopped and ground thoroughly.

International Conference on Syphilis

In a previous letter, mention was made of an international conference, held at the Hôpital St. Louis, on the occasion of the Alfred Fournier centenary, to discuss means of combating syphilis. The conclusions reached have recently been published in medical journals. The topic studied more particularly was neurosyphilis, which was considered from the points of view of pathogenesis and early diagnosis, prophylaxis and social importance. The first question led to an exchange of opinions on lumbar puncture in syphilis, with a view to establishing whether one should resort to this in all cases of syphilis, and if so, what the best time was for such puncture. This intervention cannot, it seems, be reserved for cases in which nervous symptoms have developed, for Mr. Ravaut has shown that there are latent cases of neurosyphilis that, if detected by lumbar puncture, can be arrested. Moreover, since it is difficult to repeat the puncture in the same patient, an opportune moment must be chosen. The time suggested by Mr. Sézary was the end of the first year, for that is the period of benign and transitory cerebrospinal reactions, in which one cannot distinguish the grave from the nongrave, while Mr. Ravaut recommended the end of the third year, which is the period in which treatment has usually been relaxed, and possibly it would be better to detect the neurosyphilis earlier, in order to intensify the treatment. In view of the difficulty of establishing a rule and the necessity of allowing the physician to be the judge in each case, the conference, "considering that lumbar puncture is the best means of determining the state of the nervous system during the course of syphilis, holds that it is necessary to apply the puncture during decisive stages in the course of the disease."

The second interesting point for the practitioner was the discussion of the following proposition: Has arsenotherapy increased the frequency of neurosyphilis? Some competent writers have made this charge against arsenicals, and Dujardin and R. Bernard have emphasized the beneficent rôle of the secondary efflorescence, which immunizes the patient against more grave forms of syphilis, a rôle that is thwarted if syphilis is treated too early. The arguments of Dujardin and the research of R. Bernard are impressive, but it is impossible as yet to express a final opinion. With reference to the question whether or not intensive arsenotherapy favors the development of neurosyphilis, the conference expressed itself in a categorical manner. Supported by Jadassohn, Nicolau, Hudelo, Milian, Nicolas, Cavaillon and Sicard de Plauzoles, the whole assembly took a strong stand against such an idea, showing that neurosyphilis frankly diminished, during the war (in spite of the increase in syphilis), as the result of the treatment in vogue. The resolution drawn up by Mr. Milian states: "Practitioners can be well satisfied with the action of present medicaments, and particularly the arsphenamines, which have been used since 1910." The social campaign against syphilis and the results accomplished in this field merit the appreciation of the physician.

The Sanitary Condition of Morocco

A controversy has developed in the Academy of Medicine in regard to the sanitary conditions in Morocco. Mr. Remlinger, director of the Institut Pasteur of Morocco, gave out recently a startling statement in which he charged that health conditions in Morocco were deplorable; that the vaccinations were inadequate, and that, therefore, many diseases were carried to France by incoming Moroccans. The title of his article was somewhat abrupt: "The Moroccan as an Infecter." At the next session of the academy, Mr. Léon Bernard presented a protest of Dr. Colombani, director of the public health service of Morocco. According to Colombani, the facts are just the reverse. Morocco, like other countries, has a pathology of its own, and the ordinary intercourse between nations, which is, of late years, greater than formerly, may carry disease germs to France and elsewhere; but, in reality, this pathology is not widespread, nor are there many instances of such disease transportation. The fact is, smallpox is less prevalent in Morocco than it is in England or the United States. Moreover, vaccinations in Morocco are diligently applied; during the first two months of 1932, nearly a million vaccinations were performed. The other pestilential diseases are being victoriously combated and are receding markedly. Typhoid is less frequent in Morocco than in the capital. As for malaria and amebiasis, these two diseases, while endemic in Morocco, show no tendency to spread to other countries. The rigorous sanitary measures adopted in Morocco not only afford the greatest security to the resident and transient European population but have likewise greatly improved the situation of the native population. The unjustified communication of Mr. Remlinger, who is an eminent bacteriologist and who was for many years director of the French Institut Pasteur in Constantinople, may be traceable to a feeling of resentment in not having secured in Morocco the post of director of public hygiene, which was given instead to Mr. Colombani. Such evidences of rivalry in the colonies are not particularly rare, but it is unusual for such controversies to be aired before the tribune of the Academy of Medicine.

Probable Identity of the Virus of Typhus and that of Exanthematous Fever

Confirming previous researches that have been made on crossed immunity in monkeys, Plazy and Germain presented recently to the Academy of Medicine an observation tending to demonstrate clinically the identity of the virus of exanthematous fever and that of typhus. These authors presented, last year, a similar observation. They report now the case of a patient affected with exanthematous fever, in whom daily injections of whole blood of convalescents from typhus, begun on the fourth day of the disease, brought a rapid clinical improvement, with recovery on the eighth day. This favorable evolution was controlled furthermore by several Weil-Felix reactions performed successively, and which dropped from $1/3.000$ to 0 on the eighth day. The favorable action of this immunotherapy seems therefore to confirm the conclusion previously expressed by these authors that the virus of exanthematous fever and that of typhus are identical.

BERLIN

(From Our Regular Correspondent)

June 13, 1932.

Sterilization in the Light of Criminal Law

The question is being raised more and more frequently as to whether, with reference to birth regulation and the securing of a healthy posterity, in certain cases compulsory sterilization should be applied, or as to whether sterilization by a physician at the request and with the consent of the person to be sterilized is, or should be, permissible under the law. The opinion of so experienced a jurist as Oberreichsanwalt Prof. Dr. Ebermayer, former attorney general of the *reich*, is important, as he is a member of the commission engaged in drafting a new penal code for the German *reich*.

Supporters of compulsory sterilization call attention to the examples of various North American states in which, for a number of years, sterilization has been permitted, and emphasize that it is certainly to the interest of public welfare and public health that certain persons who are subnormal mentally or physically be prevented by sterilization from having offspring that are most likely to be a burden to society. In support of this, figures are cited. In 1893 there were 834 living descendants of an alcohol addict, a woman born in 1810, of which number 181 were prostitutes, 142 were beggars, 76 were major criminals and 7 were murderers. Prussia was obliged to spend for this family, by way of prison costs, social aid and the like, the sum of $1,200,000.

In spite of the arguments cited, Ebermayer does not favor the introduction of compulsory sterilization. It constitutes a drastic negation of the right of self-determination, which the legislator should not consent to, since the effects of sterilization on the character development of the person sterilized, and on the sexual impulse, are by no means fully understood. Furthermore, the "laws" of hereditary transmission are not so fully developed as yet that one can establish with certainty, in every case, whether or not an inferior progeny affected with moral and criminal taints is to be expected. This is also the predominant standpoint of medical science, as Ebermayer has shown in "Der Arzt im Recht."

It is quite another question as to whether or not a physician should be granted the right to perform sterilization in all cases in which the person to be sterilized requests it—or at least if certain preconditions are met. At present, such a permission is granted only when there are suitable therapeutic indications for sterilization, which is seldom the case. Under such circumstances the physician, if he sterilizes with the consent of the patient, is not amenable to punishment; but if he acts without, or contrary to, the desire of the patient, he is guilty of a bodily injury punishable by law.

A sterilization for any other than therapeutic reasons—for example, for social or eugenic reasons—a physician may not, according to existing laws, undertake, even though the party immediately affected expressly demands such intervention. In medical circles, however, contrary opinions are frequently advanced, and sometimes also in legal circles; it is admitted that the physician is punishable if he acts without, or against, the desire of the other party, but it is held that he is not punishable if the other party demands sterilization, or at least consents to it. This opinion is wrong. Sterilization for other than therapeutic purposes is, according to existing German law, an objectively illegal severe bodily injury. The question may be raised as to whether the law should be changed. As to sterilization for eugenic reasons, doubt may be expressed as to whether the "laws" of hereditary transmission are sufficiently developed and understood to enable an examining board to decide with certainty, in a given case, whether or not a sterilization is indicated. On the other hand, an opportunity should be afforded a physician to perform sterilization with impunity if certain preconditions of a social nature obtain and the person [illegible]es such a request. For example, it does not appear reasonable to deny a physician the right to sterilize at her request a woman without adequate income who already has seven children that she cannot properly care for; yet, as the law now reads, he is subject to punishment if he complies with her request. The draft of a new general penal code has introduced here a good compromise: it provides that the person committing a bodily injury with the consent of the injured subject is amenable to punishment only in case the act contravenes good morals. If this provision is approved, sterilization with the consent of the person to be sterilized may be performed with impunity in all cases in which it appears reasonable and proper, as, for example, in the case just cited.

The Radiologic Treatment of Malignant Tumors

The treatment of pharyngeal carcinomas by operation and by irradiation with radium and roentgen rays has not been especially satisfactory. The aim of the new irradiation technic introduced by Coutard at the Radium Institute in Paris is to make the destruction of the tumor tissue as protracted as possible and to effect a continuous disturbance of cell division by dividing a large mass of irradiated energy into numerous single doses. Heavy filtration (0.5 mm. of copper) and the long distance of the tube (from 50 to 100 cm.) bring about a marked diminution of the wavelength and of the intensity. The total dosage is from twelve to twenty times that formerly regarded as admissible. A marked inflammation of the skin (reddening and exfoliation) and of mucous membranes (diphtheria-like coatings), developing in from ten to twelve days, retrogresses entirely after from two to three weeks. The results achieved with this treatment excel anything previously accomplished by roentgenotherapy. Coutard reported, in 1928, 26 per cent of recoveries in tonsillar carcinoma; Regaud, in 1930, 20 per cent of recoveries in carcinoma of the hypopharynx. Professor Baensch of Leipzig recently reported, before the Medizinische Gesellschaft of that city, similar favorable results. Baensch recommends combination with radium irradiation. The presence of regional metastases of the glands makes for much poorer results. Although the metastases are much reduced in size by the irradiation—they may even disappear—they return in a few weeks in an accentuated form. The Coutard method marks a distinct advance in the treatment of previously hopeless cases.

Albert Moll's Seventieth Birthday

Albert Moll, psychiatrist and psychologist of Berlin, whose name is known far beyond the limits of Germany, first became known to the general public through his unmasking of the medium Anna Rothe. The newpapers were carrying many accounts of her spiritistic séances. The participants at the séance were seated around a table, forming a complete circle by grasping one another's hands, so that apparently no one could rise unnoticed. In the darkened room, all sorts of hocus-pocus was then carried out; among other things, a ghostlike figure was seen to flit across the room. When the lights were turned on, everybody was sitting innocently about the table where they had been sitting when the room was darkened. Moll was so rude as to lift up the skirt of the medium, which created a sensation. Such conduct toward a lady was unseemly, but it exposed a white undergarment on which were fresh red splashes. Moll showed the audience how the trick was done and how the medium managed to withdraw unnoticed from the circle about the table. The body is contracted as much as possible, and then, slowly but steadily, the right hand of the left neighbor is drawn toward the left hand of the right neighbor. After the medium has strengthened and loosened her hand clasp several times, the audience, having its attention directed to the events occurring in the room, does not notice that the link in the chain has been broken, and that the medium has eliminated herself from the circle and has stopped the gap in the manner described; nor is the audience aware when she again slips back into the circle. When Moll slipped out of the chain, he waited until the white specter flitted past him, and then he injected the red contents of a syringe into the garment of the gliding specter, and, at the close of the séance, he showed the audience the red splashes on the skirt of the medium. Since then, Moll has served many times as expert in spiritistic and clairvoyant affairs, and in every case he succeeded in unraveling the deception by which the audience was being tricked. Further, Moll developed in Berlin a fruitful scientific and practical activity as a neurologist. He recognized the importance of psychotherapy and also the significance of the relations between sex impulse and psyche. His scientific experience in this field led him to conceptions that, in many respects, differ from the opinions of the psychoanalytic school. Especially well known are his publications on hypnotism, perverted sexual desire, libido sexualis, the sex life of the child, and the nervous woman.

Training of Diet Kitchen Personnel

As loose methods in the training of diet kitchen personnel have begun to be manifest, a number of diet kitchens giving instruction at German clinics and hospitals decided to establish a society, which already has thirteen collective members, including the diet kitchens of the medical clinics at Hamburg (Brauer), Kiel, Königsburg, Würzburg, Greifswald and Halle; in addition, the Stuttgarter Krankenanstalten, the Medizinische Akademie Düsseldorf, the Augusta-Hospital in Berlin, and others. These diet kitchens have adopted a uniform two-year course of study and training. The aim is to develop women directors of diet kitchens, who not only understand how to carry out a physician's prescriptions but can manage from the standpoint of economics and organization a diet kitchen independently. Especial value is attached to keeping in close touch with the hospital, the hospital organization, and the patient. Thus it is hoped that reliably trained persons will be placed at the disposal of the hospitals, the sanatoriums and the mineral spring resorts. It is planned to take into the society the diet kitchens in hospitals and clinics, which give no instruction. The organization will also promote in other directions the cause of dietetics, plans for which will have to remain in the background at present because of the economic stringency.

The Closing of the Surgical Clinic

Some months ago (The Journal, Nov. 28, 1931, p. 1640), mention was made of the fact that the Chirurgische Universitätsklinik (the so-called Bier clinic), famous by reason of its traditions and its past performances, would be closed, April 1, owing to the economic situation. Fortunately, fate has been more kind to this world-famous clinic than seemed likely, to judge from the public controversy over the question. At least the policlinic, with all its surgical specialties, has been preserved. For especially urgent and grave cases a small ward with a limited number of beds has been retained. Dr. Sauerbruch, the present occupant of the only chair of surgery at the University of Berlin, and director of the Chirurgische Klinik der Charité, has been placed in charge of the small clinic that is left. Prof. Dr. A. Israel, the clinical chief physician of Geheimrat Bier, has taken over the medical direction of the institute. Likewise, the third medical policlinic, under Professor Goldscheider, has been assigned quarters in the clinic. The eye clinic of Professor Krückmann has not been affected in the least by the new arrangements.

Vital Statistics for 1931

Regierungsrat Dornedden, of the federal bureau of health, calls attention, in the *Reichs-Gesundheitsblatt,* to the fact that living births for the year 1931 show a decrease of about 96,000 over 1930, in spite of the steady decreases of recent years. To each thousand women of child-bearing age there were, in 1913, 116.5 living births; in 1930, 67.2, and in 1931, 61.8, or only 53 per cent of the last prewar year value. According to statistics for the first quarter of 1932, the decline in the birth rate continues. In contrast with the previous years, the decline in births for 1931 was most marked in the communes with less than 15,000 inhabitants. In contradistinction to the decline in the birth rate, the number of deaths in 1931 showed an increase of 15,000, notwithstanding the fact that the reduction in births led one to anticipate a decrease of about 8,650 deaths. The infant mortality for 1931 was 0.1 below that of 1930. In comparison with the prewar period, the infant mortality declined most in the third quarter and the least in the first quarter. This indicates that the typical summer diseases of infants have hitherto been combated with greater success than the winter diseases. The smaller decrease in the first quarter is only in part ascribable to the increased mortality resulting from epidemics. As to the chief causes of death in general, there are as yet no federal statistics for the year 1931. However, the Prussian statistics, which extend through the third quarter of 1931, give information on the more important causes of death, and especially on the increase of mortality in the first quarter of 1931, which was caused chiefly by the prevalence of influenza and disorders of the respiratory and circulatory organs. Aside from the increase in the number of cancer cases due to the greater average age of the population, the mortality figures for 1931 were not unfavorable. There was a marked decline in the mortality from acute infectious diseases, including childbed fever, diseases of the digestive tract, accidents and, to a slight extent, tuberculosis, whereas the suicide rate showed a slight increase.

BUDAPEST

(From Our Regular Correspondent)

May 31, 1932.

Sources of Error in Cancer Statistics

In a lecture given before the Medical Society by Dr. K. Wolff it was emphasized that the present method of preparing cancer statistics should be revised. The only reliable statistics are those founded on diagnoses established in vivo, at postmortems on histologic sections, and, finally, on the data afforded by compulsory death certificates. Unsupported clinical diagnoses of cancer, according to calculations, are erroneous in from 20 to 40 per cent of cases; therefore, exact statistics cannot be expected without histologic controls. The verdicts of coroners, some of whom are not physicians, are quite unreliable. Thus statistics which appear to prove the increase of cancer mortality may indicate only the development of the science of medical diagnosis; whereas cancer mortality rises in such statistics, the number of cases labeled senile marasmus, unknown disease and other indefinite diagnoses decreases. Nowadays, well trained physicians know that nobody dies solely from senile debility. If the patient had no other disease he would be certain to have myocardial degeneration or a bronchopneumonia. Postmortem statistics are also unreliable, because they reflect the conditions not of the whole population but of the hospital class. This objection holds true still more with regard to the statistics based on histologic material alone. The fewer the cases utilized in the compilation of cancer statistics, the less reliable the results are. In one hospital the leading surgeon may have a predilection for cancer cases; hence the cancer turnover is high. Another hospital hardly admits cancer patients, because its surgeons work on other lines; the number of cancer cases here will be low. Such sources of error can be eliminated by the collation of the material of many hospitals, when those which have large children's departments will serve to balance others dealing almost exclusively with cancer cases. Thus a fairly accurate picture of the conditions of population could be obtained, but only of the hospital class. The statistics heretofore published do not prove; in Dr. Wolff's opinion, the assumption that the rate of mortality from cancer shows a rising tendency. A relative rise is the obvious corollary of the fact that the number of deaths from other curable and preventable diseases is diminished. But this means only that no defense against cancer exists because of ignorance concerning its cause, its therapy and its prophylaxis. The average duration of life is increasing steadily all over the world. Cancer is the disease of elderly persons. If the average duration of man's life is increasing, there are more elderly persons—that is to say, more people reach the age at which cancer is apt to occur. It may well be that the number of cancer cases shows considerable increase with the rise of the average duration of life. In Dr. Wolff's opinion the apparent increase in the incidence of cancer has been too much emphasized. The mortality rate of every disease displays some oscillations if the statistical material available over several years is scrutinized. Wolff protests against the interpretation of what may be only natural oscillations as a progressive rise in incidence.

Dr. Ödön Zalka also expressed the opinion that the mortality statistics of cancer leave much to be desired. According to his observations the error in cases of gastric cancer is 31 per cent, in uterine cancer 7 per cent, in rectal cancer 19 per cent, and in esophageal cancer 130 per cent. The statistics collected by him show no progressive increase of cancer, its occurrence being fairly constant. For instance, between 1919 and 1923 among the necropsies in the Budapest University Clinics on patients over 20 years of age the cancer rate amounted to 12.52 per cent. Since in quite recent years a larger proportion of different sections of the population seek relief in hospitals and are subjected to routine postmortem examinations, he believes that the data provided by postmortem statistics today are nearer to reality, and more nearly representative of the truth, than the older statistics.

Rat Extermination in Yugoslavia

Following the example of Hungary, the Yugoslavian health authorities insist on holding a rat extermination week this year. They emphasize the need that exists for some safe and sure method of exterminating rats, which are, as is generally known, a common medium by which plague is introduced or spread. The ordinary methods of shooting, hunting by dogs, cats or ferrets, and catching in traps are not wholesale enough, while poisoning with arsenic, phosphorus, strychnine and barium is dangerous to other animals and may become a danger to human beings by reason of the poisoned rats dying and remaining under floor boards and afterward putrefying. Consequently, bacteriologists have suggested some form of disease that is slowly fatal to rats and other rodents, but harmless to other animals, being spread among the rats, which in their turn would continue to spread the disease by infection from one to the other. There are diseases that affect only animals of certain species, as for instance hog cholera and swine fever, and bacteriology has succeeded in furnishing germs that cause disease of the digestive tract in rats and other rodents, but apparently, so far as can be judged at present, not in other animals. These bacillary poisons or rather toxins vary somewhat, at least in name. Those that have been introduced abroad and spoken of more or less as affecting the purpose mentioned are ratin, rathite, Liverpool virus, rattentod (German) and ratomurin (Hungarian). The bacilli are cultivated on various mediums and mixed with food that rats eat. The effect of the bacillus or its toxin on the rat is to produce intestinal disease, spread through the feces to other rats through the medium of food. Reports as to success in practice of these bacillary or microbial poisons are contradictory, and the results vary, probably owing to the varying potency of the toxins used and the varying susceptibility of rats. Some rats may be immune, or may become so when fed with small quantities of a diluted culture or a culture of low toxicity.

Autohemotherapy in Cases of Late Syphilis

In a lecture given at the Budapest Royal Medical Society, Dr. Rajka spoke on the effect of light treatment and autohemotherapy on obstinate cases of late syphilis in which, despite treatment with the routine chemicals, the Wassermann reaction is persistently positive. His method, he said, was to give a course of thirty irradiations and twenty injections of blood taken from the patient's own vein, half an hour after irradiation begins. The positive Wassermann reactions became negative in 57 per cent of the latent or symptomless cases and in 28 per cent of those in which there were signs of damage to the nervous system. The reaction has so far remained negative for periods of from two months to three years, becoming positive again in about a third of the cases. The subjective symptoms improved in every case (forty-one) of syphilis of the nervous and circulatory blood systems. The tests were begun two years ago and remissions have varied from one to nineteen months in length. There has been relapse in nine cases only, and of these four improved on a second course of treatment. The patients all felt better in general health, not only during but also after treatment. They slept and ate better, gained in weight, and became more vigorous. It is probable, the lecturer said, that occasional courses of treatment will stabilize this improved condition.

ITALY

(From Our Regular Correspondent)

May 31, 1932.

The Latin Otorhinolaryngologic Congress

The congress of the Società otorinolaringologica latina was held at Catania, under the chairmanship of S. Citelli, director of the Clinica otorinolaringoiatrica of the University of Catania. The first main topic on the program, "The Anatomy and Pathology of the Maxillary Sinus," was discussed by various Italian and foreign speakers. De Mendoça of Lisbon studied the various causes of maxillary sinusitis. The chronicity of the disease is often induced by the anomalous locations of the sinusal orifices. His experience has led the speaker to believe that in childhood maxillary sinusitis is more frequent than is commonly supposed, although in some cases of suspected sinusitis osteomyelitic factors may be involved. Aubin and Ardoin of Paris presented the results of histologic researches that they had carried out on the mucosa of the maxillary sinus in acute and chronic inflammations. They divide the acute forms into catarrhal, mucopurulent and gangrenous attacks, and the chronic forms into hyperplasic, atrophic, metaplasic and cholesteatomatous types. In addition to the histologic data pertaining to each of these forms, the speakers explained data that they had derived from histologic observations carried out on polypoid hyperplasias of the chronically inflamed mucous membrane of the maxillary sinus. Metzianu and Tempea of Bucharest spoke on the relations between ozena and the maxillary sinus. The speakers examined the maxillary sinus in nineteen ozena patients with the acid of modern semeiologic agents but found lesions of the sinus in only three cases.

Lasagna of Parma spoke on maxillary sinusitis in children, giving considerations on therapeutic management; more particularly, medical treatment (irrigations) and immunologic treatment (vaccinations). Surgical intervention is rarely necessary. Calicetti of Bologna dealt with the endocranial complications of inflammatory processes of the maxillary sinus, among the most frequent causes of which they recognized traumatisms (chiefly operative), osteomyelitis and involvement of the other sinuses in the infection. He studied the mode of diffusion of sinus infection to the cranial cavity and its clinical manifestations. Simeoni of Naples considered the maxillary sinus as the possible focus of general infection and explained the various complications (auricular, endocranial, bronchopulmonary, renal, and the like) to which an inflammatory process of the sinus may give rise, particularly if chronic and due to virulent micro-organisms.

Bougeois of Paris spoke on the therapeutic indications in the course of maxillary sinusitis, considered as an isolated form. When the medical treatment is insufficient, it is necessary to have recourse to puncture followed by lavage, or possibly a radical operation, which he recommends performing with a wide opening of the sinus through the inferior meatus of the nose. In forms of dental origin he advises waiting a few days, after removing the tooth, before applying lavage of the various passages.

Carcò of Catania treated ten patients with maxillary sinusitis by means of vaccinotherapy and effected recoveries in all the acute and subacute cases and in two out of the four chronic cases. Vaccinotherapy was used to supplement surgical treatment.

Moulonguet and Doniol of Paris treated twelve cases of chronic maxillary sinusitis with the d'Herelle bacteriophage, securing thereby seven recoveries in a series of twelve cases. They conclude that in these morbid forms phagotherapy is a harmless anodyne method but that it does not seem to give better results than are obtainable by the ordinary methods. Pietrantoni of Brescia explained the advantages of crenotherapy, not only localized but general, in the treatment of sinusitis. Fallas of Brussels spoke on tuberculous sinusitis, a rare condition, for the most part secondary to specific lesions of adjacent organs, nasal or buccal. The speaker distinguished three clinical forms, hidden, osseous and tumoral, in each of which he set forth the symptomatology and the therapeutic indications. The method of choice is surgical intervention.

Gaillard of Lyons spoke on syphilis of the maxillary sinus, dealing especially with the pathogenesis. Tertiary lesions constitute nearly all the cases described in the literature. Citelli of Catania described the disease reported by him in 1918 and known by the term "Citelli's polypus." It consists in the prolapse of part of the mucosa of the maxillary sinus into the corresponding nasal fossa. The microscopic examination identifies the presence of the mucosa. A large proportion of the Killian polyps, if examined microscopically, would be recognized as Citelli polyps. Simple removal is generally sufficient.

Fairen of Saragossa spoke on malignant tumors of the maxillary sinus. In the general statistics of tumors, the maxillo-ethmoidal localization occurs with a frequency of 1.5 per cent. The speaker considered the various histologic forms, the clinical aspects, and the fundamental diagnostic factors. From the therapeutic point of view, he considers that a new phase of treatment may be represented by injections of serum of cancer patients, or of extracts of tumor tissues. Surgical treatment and treatment with roentgen rays and electrocoagulation rarely give good results.

The second topic, "Methods of Examining the Vestibule," was developed by Quix. The speaker criticized the methods at present employed, declaring them to be incomplete, since they are confined to the functional study of the canals. The examination of the patient in the rotatory chair has little value in otology. It is preferable to use the rotatory disk, which enables the examiner to test the reflexes of the semicircular canals with the rotation of variable velocity and the reflexes of the otoliths with a regular rotation produced by centrifugal action. In many cases it is possible to distinguish peripheral disorders from central disturbances by the form of the nystagmus. From the clinical point of view the deviations in the tests of the index have more value than the nystagmus.

Congress of Microbiology

The fourth congress organized by the Italian section of the Società internazionale di microbiologia will be held in Milan in November. The chief topics on the program are: (1) Microbic Dissociations, to be presented by Professor Petragnani of the University of Siena; (2) Local Immunity, with a paper by Professor Mariani, and (3) Micro-organisms of the Terrane and the Fixation of Atmospheric Nitrogen, to be considered by Prof. Gino De Rossi. Also the following subjects will be taken up: (1) Postvaccinal Encephalitis, by Professor Allaria, and (2) Blood Groups and the Physical Constitution, by Dr. Viola.

The Death of Prof. Baldo Rossi

The death of Prof. Baldo Rossi, senator and director of the Clinica chirurgica of the University of Milan, is announced. Born in 1868, he was graduated at the University of Pavia in 1893. Devoting himself to the study of pathologic anatomy, he spent a year in Munich, where he did research in bone fractures. On returning to Italy he became the director of a new department of traumatology and mechanotherapy in the Ospedale Maggiore at Milan, of which he became, in 1905, chief surgeon. Later he occupied the chair of traumatology in the Instituti clinici di perfezionamento in Milan and was manager of the journal *Clinica Chirurgica*. During the war he studied at the Franco-German front the organization of surgical services at the front. After the war, in collaboration with Mangiagalli, he helped to promote the organization of the University of Milan, and that having been founded, he created the new Clinica chirurgica, of which he was appointed director. In 1924 he was elected rector of the university. His numerous publications deal chiefly with traumatology but consider also general surgery, of which he was an ardent teacher.

The University City of Rome

By a recent order of the Consiglio dei ministri (ministerial cabinet) a special consortium comprising representatives of the government and of local organizations was established, to which will be entrusted the reorganization and further development of building plans for the University of Rome. The new buildings, which will include a students' dormitory, will be erected in the vicinity of the Policlinico. The cost of the extensive undertaking will be about 70,000,000 lire ($3,500,000). Building operations will extend over a period of three years.

SOUTH AFRICA

(From Our Regular Correspondent)

Cape Town, May 27, 1932.

Dental Caries in Native Children

Several investigators have been working at the problem of carious teeth in native children, but so far few of the results have been published. Recently Prof. Middleton Shaw of the Dental School of the Faculty of Medicine of the Witwatersrand University has published his conclusions based on the study of the available data. He states that the chief predisposing cause of caries at present is the bad diet of recent generations; there is no cause operating today which renders teeth more susceptible to bacteria; there is no difference or degenerative change in the microscopic structure of the teeth at present as compared with those of our ancestors thousands of years ago. These conclusions are in direct opposition to the views of the Mellanbys, who hold that carious teeth constitute an avitaminosis. The data collected from extensive investigations of native school children in this country show, however, that avitaminosis has little or no direct influence on the primary dentition, whatever it may have on the secondary set. Aboriginal native children, in general, have atrociously bad temporary teeth, while their permanent teeth, especially among the boys, are much better than those of European lads of the same age.

Country Practitioner a Great Paleontologist

Dr. Robert Broom, F.R.S., a country practitioner in the Albany district in the Cape province, is the foremost authority on the fossil mammals of the Karroo, and probably one of the recognized experts on the evolution of the mammals. His monograph on the Origin of the Mammalia has just been published under the auspices of the Carnegie Foundation and the Union Research Board. It is a large quarto work, dealing with the classification of the fossil genera which he has studied for more than thirty years. In the course of a busy country practice, Dr. Broom has found time to investigate the rich shale deposits of the Karroo, which contain, as he estimates, millions of well preserved mammalian skeletons, and he has described many genera and hundreds of new species. His scientific attainments are little known outside the ranks of paleontologists, for he is a quiet, reserved man. He has done much for science in South Africa. His new monograph is an achievement of which the profession in South Africa may well be proud.

The New Secretary of Public Health

Dr. J. A. Mitchell, who retires this month as secretary of public health and medical officer of health to the Union of South Africa, succeeded Dr. Arnold as medical officer of health for the union. When he took over the work there was no public health act and no consolidated medical act in the union, and his work consisted largely in supplying these two deficiencies. The present medical, dental and pharmacy act, which consolidates the four provincial acts relating to medical practice, was his conception, but it took many years before he could get it on the statute book. The public health act, passed some years previously, is an involved piece of legislation and is mixed up with housing; it can hardly be called a model act and in time it will probably be amended to meet the changed conditions of the country. Dr. Mitchell, who was especially interested in bacteriology and epidemiology, was regarded as a capable and conscientious official but was criticized because he did not allow his department to expand in proportion to the increasing health needs of the people. As a matter of fact, the expenditure on the housing and care of the mentally defective citizens has increased proportionately more quickly than that on public health in general. The late secretary of public health had a hard row to hoe, and of late years his bad health prevented him from insisting on progressive developments. He is succeeded by his second in command, Sir Edward Thornton, who has for many years acted as chief of the medical defense department. Sir Edward is a popular public health official, who has an intimate knowledge of the interrelations between the central government and the provincial administrations, and who, unlike his predecessor, has always taken a keen interest in professional politics and is a prominent member of the federal council of the medical association.

The Vacancy in the Medical Council

Three months ago Dr. W. Darley Hartley, emeritus editor of the medical journal and the oldest member of the South African Medical Council, which has jurisdiction over all registered medical practitioners in the union, resigned. At the last election he headed the poll. His place must be taken by a practitioner from his province, and the Medical Association unanimously recommended Dr. Moffat of Cape Town, who has now been elected without opposition. Dr. Moffat is a consulting surgeon, the senior in his specialty in the province, and a member of one of the best known English missionary families in the union. He has recently retired from active practice to devote part of his time to the medical council and the federal council of the association, of which he is a member.

The Annual Medical Congress

The twenty-sixth South African Medical Congress opens next month at East London under the presidency of Dr. Bruce Bays, one of the senior physicians in the eastern province of the cape. An attractive program has been arranged for all the sections, but the meeting is liable to be less well attended than the last two congresses, owing to the fact that many colleagues have left to attend the centenary meeting of the British association in London next month. East London is an attractive seaside resort. It is not far from the native territories and the interesting mission and educational center Fort Hare, which many regard as the future site of our first native medical school.

Marriages

George William Cooper, Lieutenant, M. C., U. S. Navy, to Miss Helen Derbes of Houma, La., July 19.

Alan Phares Parker, Philadelphia, to Miss Janet Johnson Reeve of Haddonfield, N. J., May 6.

Samuel Schwimmer, New York, to Miss Jean Langberg of Mount Vernon, N. Y., June 19.

Anthony Bagnuola, Chicago, to Miss Janice Emily Livingstone of Baltimore, April 11.

Charles L. Youngman to Miss Elizabeth M. Luppert, both of Williamsport, Pa., April 17.

John F. Wixted, Sterling, Ill., to Dr. Julia M. Lundstrom of Chicago, July 16.

Benjamin H. Battock, Spivak, Colo., to Miss Bertha Chertoff of Denver, July 17.

Jacob Schmukler to Miss May Dollinger, both of Newark, N. J., July 3.

John J. Shaw to Miss Beatrice Vare, both of Philadelphia, July 13.

Deaths

Robert Emmett Farr ⊕ Minneapolis; Rush Medical College, Chicago, 1900; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, the Western Surgical Association and the Associated Anesthetists of the United States and Canada; fellow of the American College of Surgeons; author of "Practical Local Anesthesia and Its Surgical Technic"; aged 57; attending surgeon to St. Mary's Hospital, where he died, June 30, of shock, following extensive rhizotomy in hypertrophic arthritis of the spine with pressure on nerve roots.

Herman Von Wechlinger Schulte ⊕ Omaha; Columbia University College of Physicians and Surgeons, New York, 1902; member of the American Association of Anatomists; professor of anatomy since 1916, junior dean, 1916-1917, and since 1917 dean, Creighton University School of Medicine; formerly instructor of anatomy, assistant demonstrator, demonstrator, adjunct professor, assistant professor and associate professor at his alma mater; chief of staff of St. Joseph's Hospital; aged 55; died, July 13, of heart disease.

Alfred Johnson ⊕ Jamaica, N. Y.; L.R.C.P., London, and M.R.C.S., England, 1897; University of Durham College of Medicine, Newcastle-upon-Tyne, England, 1913; at one time lecturer in surgery, New York University Medical College; served during the World War; formerly on the staffs of the Flower Hospital, New York, and the Mary Immaculate Hospital, Jamaica; aged 60; died, June 27, of coronary arteriosclerosis and myocarditis.

Oliver Babcock Wait, Philadelphia; New York Homeopathic Medical College and Hospital, 1894; Hahnemann Medical College and Hospital of Philadelphia, 1910; associate professor of obstetrics, Hahnemann Medical College and Hospital of Philadelphia; veteran of the Spanish-American War; aged 60; died, June 30, of myocarditis.

Herman Victor Magnusson, Bell, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1903; member of the California Medical Association; aged 56; was electrocuted, July 2, by a roentgen ray machine with which he was giving a patient a treatment.

Aloysius J. Lennon ⊕ Joliet, Ill.; College of Physicians and Surgeons, Chicago, 1901; fellow of the American College of Surgeons; chief of the obstetric department, St. Joseph's Hospital, and surgeon to the Silver Cross Hospital; aged 54; died, July 7, of undulant fever.

Stephen S. Stack ⊕ Milwaukee; Rush Medical College, Chicago, 1883; member of the American Psychiatric Association; aged 72; for many years medical superintendent of the Sacred Heart Hospital, where he died, June 18, of arteriosclerosis and myocarditis.

William Marcy Hindman ⊕ Burlington Junction, Mo.; Chicago College of Medicine and Surgery, 1914; president of the Nodaway County Medical Society; on the staff of St. Francis Hospital, Maryville; aged 48; died, June 26, of a tumor of the lung.

Charles Hamlin Good, Huntington, Ind.; Rush Medical College, Chicago, 1883; member and past president of the Indiana State Medical Association; formerly on the staff of the Huntington County Hospital; aged 71; died, July 1, of heart disease.

Harry Leroy Whitney, Plymouth, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1884; member of the Medical Society of the State of Pennsylvania; past president of the Luzerne County Medical Society; aged 71; died, July 11.

William Joseph Sheehan ⊕ Boston; Tufts College Medical School, Boston, 1903; member of the New England Otological and Laryngological Society; aged 57; on the staff of the Carney Hospital, where he died, June 12, of acute nephritis and uremia.

Arthur Kenworthy Hoge ⊕ Wheeling, W. Va.; Jefferson Medical College of Philadelphia, 1914; fellow of the American College of Surgeons; ophthalmologist and otolaryngologist to the Ohio Valley General Hospital; aged 43; died suddenly, June 30.

Harlow V. Wilson, Champaign, Ill.; Medical Department of Washington University, St. Louis, 1903; member of the Illinois State Medical Society; aged 56; was killed, June 27, when his automobile, under which he was working, fell on his chest.

Maurice Thomas Scanlan, Boston; Tufts College Medical School, Boston, 1908; member of the Massachusetts Medic Society; surgeon for the city police department; aged 48; die suddenly, July 1, of heart disease.

George Edgar Hassinger, Middleburg, Pa.; Jefferson Medical College of Philadelphia, 1881; formerly postmaster of Middleburg and member of the board of education; aged 74; died, June 12, of uremia.

Francis Arista Shoaf, Kokomo, Ind.; Medical College of Indiana, Indianapolis, 1882; past president of the Howard County Medical Society; aged 76; died, June 27, at Rochester, of chronic nephritis.

Edwin Ellsworth Higgins, Brooklyn; Long Island College Hospital, Brooklyn, 1886; on the staffs of the Cumberland and Brooklyn Eye and Ear hospitals; aged 70; died, June 19, of heart disease.

Noah B. Chipman, Falmouth, Ky.; Cincinnati College of Medicine and Surgery, 1876; formerly member of the state legislature and state senator; aged 79; died, June 26, of angina pectoris.

Cyrus Decker Lloyd, Leavenworth, Kan.; Tufts College Medical School, Boston, 1898; member of the Kansas Medical Society; aged 62; died, June 26, of cerebral hemorrhage.

Clarence F. Schiltz ⊕ American Falls, Idaho; Ohio Medical University, Columbus, 1900; aged 55; died, June 24, of complications, following an operation for appendicitis.

Herbert Victor Louis Sapper, Oklahoma City; University of Illinois College of Medicine, Chicago, 1917; aged 44; died, June 3, of cerebral hemorrhage and heart disease.

Vernon Dee Brigham, Robinson, Ill.; University of Cincinnati College of Medicine, 1920; aged 39; died, May 17, at Elk City, Okla., of poison, self-administered.

Horace Miller Edmonds, Tonawanda, N. Y.; Bellevue Hospital Medical College, New York, 1885; aged 74; died, June 4, of myocarditis and arteriosclerosis.

J. Amedee Demers, Sherbrooke, Que., Canada; School of Medicine and Surgery of Montreal, 1917; aged 40; died, June 23, of essential hypertension and uremia.

Marks H. Hillyard, Quincy, Mich.; Eclectic Medical College of Pennsylvania, Philadelphia, 1879; Civil War veteran; aged 91; died, May 27, of pneumonia.

Maurice Heppner ⊕ San Francisco; College of Physicians and Surgeons of San Francisco, 1916; aged 38; died, May 22, of heart disease.

Victory Augusta Derrick, Oakland, Calif.; College of Physicians and Surgeons of San Francisco, 1898; aged 59; died, May 31.

Harold Morse Whiteway ⊕ Los Angeles; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 66; died, June 6.

Ephraim Rinehart, Frankfort, Ind.; American Medical College, Indianapolis, 1897; aged 72; died, in May, of heart disease.

Mabel Pearl Russell, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1922; aged 35; died, June 6.

Bureau of Investigation

KOREMLU

The Life History of a Viciously Dangerous Depilatory

A depilatory sold under the name of "Koremlu Cream," marketed first under the trade name Kora M. Lublin but later under the trade style Koremlu, Inc., was dealt with at some length in this department of The Journal, Feb. 21, 1931.

It was brought out in this article that Koremlu contained over 7 per cent of thallium acetate, a virulent poison, and yet was being advertised as harmless and "beneficial to the skin." In the original article, the Bureau of Investigation reported some cases of serious poisoning following the use of Koremlu. Subsequent to the publication of the original article, there appeared in The Journal clinical reports of many other cases of poisoning. Briefly, to recapitulate, the following cases of poisoning (arranged chronologically) alleged to have followed the use of Koremlu have been brought to the attention of The Journal:

1.—*Dr. Milton Sherry,* Baltimore: Reported on Nov. 4, 1930, the case of a patient acutely ill following the use of Koremlu. (Briefly referred to in Journal article, Feb. 21, 1931.)

2.—*Dr. John Lansbury,* Rochester, Minn.: Reported in the *Proceedings of the Staff Meetings of the Mayo Clinic,* Nov. 12, 1930, a case of thallium poisoning following the use of Koremlu. (Referred to in original Journal article.)

3.—*Dr. Henry B. Potter,* Wakefield, R. I.: Reported on Dec. 5, 1930, the case of a woman suffering from general alopecia following the use of Koremlu. (Referred to in Journal's original article.)

4.—*Dr. C. J. Noonan,* Brooklyn: Reported on Dec. 15, 1930, a case of severe multiple neuritis in patient who had used Koremlu. (Referred to in original Journal article.)

5.—*Miss Emma K. McCormick,* Westmoreland Hospital Association, Greensburg, Pa.: Reported Dec. 20, 1930, two cases in her own sisters, both of whom had used Koremlu. (Referred to in original Journal article.)

6.—*Dr. George H. Van Gaasbeek,* Springfield, Mass.: Reported Jan. 27, 1931, the case of a woman who suffered "the agonies of the damned" with muscle atrophy of both legs following the use of Koremlu.

7.—*Dr. John Lansbury,* Rochester, Minn.: Reported Feb. 28, 1931, another case of severe poisoning following the use of Koremlu Cream. Also reported another case of a sister of the patient just mentioned, who also used Koremlu.

8.—*Dr. C. Guy Lane,* Boston: Reported March 10, 1931, a case of marked multiple neuritis following the use of Koremlu in the medical service of *Dr. Chester Jones* at the Massachusetts General Hospital.

9.—*Dr. Sigmund S. Greenbaum,* Philadelphia: Reported on April 14, 1931, a case of marked alopecia of the scalp with hypertrichosis persisting on the upper lip and cheek of a woman who had used Koremlu. (Briefly reported in The Journal, May 30, 1931.)

10.—*Dr. J. Frank Schamberg,* Philadelphia: Reported on April 14, 1931, a case of multiple neuritis and general weakness, together with alopecia of the scalp, following the use of Koremlu. (Briefly reported in The Journal, May 30, 1931.)

11.—*Messrs. West and Eckhardt,* attorneys, Chicago: Reported on April 25, 1931, that they had a client who had became seriously ill after using Koremlu.

12.—*Better Business Bureau* of Rochester, N. Y.: Reported May 6, 1931, the case of a Rochester school teacher who developed severe neuritis following the use of Koremlu.

13.—*Messrs. Mackenzie, Smith, Michell and Bruce,* attorneys, Syracuse, N. Y.: Reported on May 19, 1931, that they had a client who had been severely poisoned with thallium following the use of Koremlu.

14.—*Dr. Victor H. Bassett,* Health Officer of Georgia: Reported June 29, 1931, two cases of thallium poisoning following the use of Koremlu.

15.—*Dr. Charles L. Short,* Boston: Reported a case of severe poisoning following the use of Koremlu. (Case published in The Journal, July 11, 1931.)

16.—*Dr. William E. Lower,* Cleveland: Reported on June 23, 1931, that he and his associates were preparing detailed reports on three cases of thallium poisoning following the use of Koremlu.

17. *Dr. Allen N. Safier,* McKeesport, Pa.: Reported on July 11, 1931, a case of thallium poisoning following the use of Koremlu.

18.—*Times-Press,* Akron, Ohio: Reported in its issue of July 14, 1931, that Mrs. Ernest E. Leonard had filed suit for $150,000 against a local department store because of thallium poisoning following the use of Koremlu.

19.—*Mr. James F. Twohy,* attorney, Brooklyn: Reported Aug. 27, 1931, that he had a young woman as a client who had become practically blind following the use of Koremlu.

20.—*Dr. Thomas P. Waring,* Savannah, Ga.: Reported a case of thallium poisoning following the use of Koremlu. (Published in The Journal, Sept. 5, 1931.)

21.—*Messrs. Raines and Raines,* attorneys, Rochester, N. Y.: Reported on Nov. 25, 1931, that they had a client who had been poisoned by thallium contained in Koremlu.

22.—*Dr. Robert P. Kennedy,* Rochester, N. Y.: Reported on Nov. 27, 1931, a case of severe peripheral neuritis and some mental changes following the use of Koremlu.

23.—*Mr. Harold T. Meek,* attorney, St. Louis: Reported on Dec. 1, 1931, that he had a client who had been poisoned by Koremlu.

24.—*Messrs. Mackenzie, Smith, Michell and Bruce,* attorneys, Syracuse, N. Y.: Reported on Dec. 3, 1931, that in addition to the previous case of Koremlu poisoning, they were attorneys for another client who was still unable to walk normally following the use of Koremlu.

25.—*Dr. F. M. Stanton,* Columbus, Ohio: Reported on Jan. 2, 1932, the case of a 26-year-old woman suffering extreme pain in arms and legs following the continued use of Koremlu.

26.—*Dr. Harold K. Harris,* Columbus, Ohio: Reported on Jan. 10, 1932, a severe case of peripheral neuritis following the use of Koremlu.

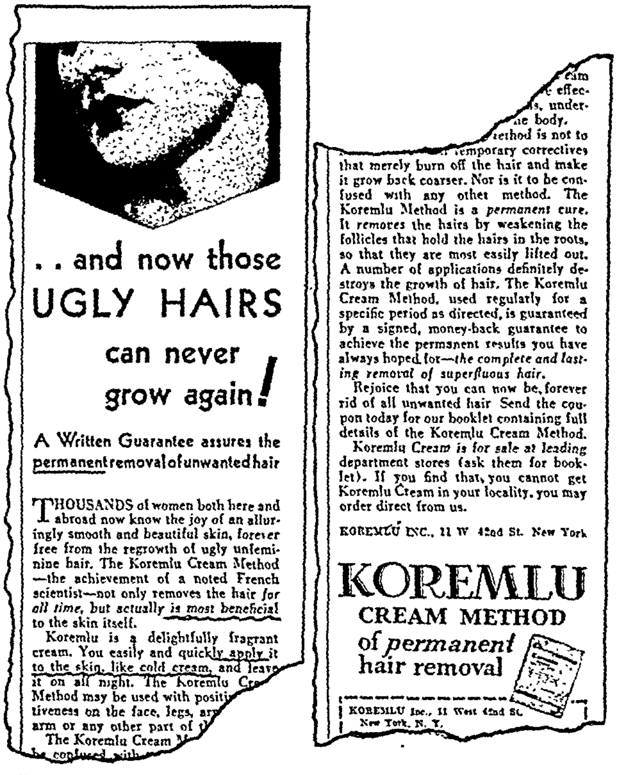
27.—*Dr. William Mahoney,* Boston: Reported three cases of retrobulbar neuritis due to thallium poisoning following the use of Koremlu. (Published in The Journal, Feb. 20, 1932.)

28.—*Mr. Victor E. Tice,* attorney, Bethlehem, Pa.: Reported Feb. 29, 1932, that a woman client was about to bring suit for injuries believed to have been caused by the use of Koremlu.

29.—*Mr. Alvin T. Sapinsley,* attorney, New York City: Reported March 4, 1932, that he had brought action in behalf of a client against Koremlu, as a result of injuries sustained by using the product.

30.—*Drs. Walter I. Lillie and Harry L. Parker,* Rochester, Minn.: Reported two cases of retrobulbar neuritis due to thallium poisoning following the use of Koremlu. (Published in The Journal, April 16, 1932.)

31.—*Drs. W. S. Duncan and E. H. Crosby,* Cleveland: Reported in The Journal, May 30, 1931, a case of thallium poisoning following the use of Koremlu.


. . and now those
UGLY HAIRS
can never
grow again!

A Written Guarantee assures the permanent removal of unwanted hair

THOUSANDS of women both here and abroad now know the joy of an alluringly smooth and beautiful skin, *forever* free from the regrowth of ugly unfeminine hair. The Koremlu Cream Method—the achievement of a noted French scientist—not only removes the hair *for all time,* but actually is most beneficial to the skin itself.

Koremlu is a delightfully fragrant cream. You easily and quickly apply it to the skin, like cold cream, and leave
it on all night. The Koremlu Cr
Method may be used with positi
tiveness on the face, legs, ar
arm or any other part of t
The Koremlu Cream M
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ethod is not to
temporary correctives that merely burn off the hair and make it grow back coarser. Nor is it to be confused with any other method. The Koremlu Method is a *permanent* cure. It *removes* the hairs by weakening the follicles that hold the hairs in the roots, so that they are most easily lifted out. A number of applications definitely destroys the growth of hair. The Koremlu Cream Method, used regularly for a specific period as directed, is guaranteed by a signed, money-back guarantee to achieve the permanent results you have always hoped for—*the complete and lasting removal of superfluous hair.*

Rejoice that you can now be forever rid of all unwanted hair Send the coupon today for our booklet containing full details of the Koremlu Cream Method.

Koremlu *Cream is for sale at leading* department stores (ask them for booklet). If you find that you cannot get Koremlu Cream in your locality, you may order direct from us.

KOREMLU INC., 11 W 42nd St. New York

KOREMLU
CREAM METHOD
of *permanent*
hair removal

KOREMLU Inc., 11 West 42nd St.
New York, N. Y.

Reproduction (greatly reduced) of a column advertisement of Koremlu appearing in *Vogue,* Feb. 1, 1931.

Following the publication of The Journal's original article, the Bureau of Investigation received letters from physicians who had been consulted by department stores concerning the marketing of Koremlu. These physicians reported that the Koremlu concern, in order to back up its claims for the alleged harmlessness of its product, were sending to such department stores a letter stating that Koremlu Cream had been "investigated, analyzed and tested by two of the foremost specialists in this line of work, Dr. Pease of the Pease Institute of New York, and Dr. Wimmer of Columbia University, New York."

That Dr. Herbert D. Pease of the Pease Laboratories should furnish a favorable report for this product, may not surprise those who have followed the reports from the Pease Laboratories for other nostrums whose manufacturers were desirous of investing their products with an air of respectability.

That Dr. Curt P. Wimmer, professor and associate dean of the College of Pharmacy of Columbia University, should have given aid and comfort to the enemies of public health is more surprising. Yet it appears that Dr. Wimmer wrote to Koremlu, Inc., under date of Feb. 21, 1931—the same date as that on which the Bureau of Investigation published its article on Koremlu. In this letter to the Koremlu concern it was stated that Dr. Wimmer had made an extensive study *of the literature* [Italics ours.—Ed.] on thallium acetate; that the study revealed that thallium acetate was widely and extensively used internally for depilation in cases of ringworm; that the literature on the external application of the salt failed to reveal any cases of toxicity resulting from its use. The letter stated, also, that there was no evidence that thallium acetate could penetrate the skin and enter the blood stream or cause toxic disturbances by absorption. He added that he had applied the cream to himself in one-gram portions for a period of ten days and had not noted any effect. In view of this, he came to the conclusion that there was no danger of toxic effect in the use of Koremlu.

Dr. Wimmer's "intensive study of the literature" was not intensive enough. Dr. Sabouraud of Paris, who has done more with thallium acetate ointments than any man living, reported in *La Clinique*, Feb. 16, 1912 (twenty years ago) that such ointments were extremely toxic even when used under medical supervision. The *Pharmaceutical Journal and Pharmacist* of June 12, 1922, published an extensive abstract of Sabouraud's article. The *British Medical Journal*, March 26, 1927, reported, editorially:

> "Thallium rubbed into the skin with oil or alcohol is readily absorbed, but exerts no action on the skin until after absorption; it has no local action."

In October, 1929, Sabouraud published an important article in *La Clinique* on the "Danger of Thallium Acetate Pomades in Hypertrichosis." In it he pointed out that he had used such ointments in his practice for twenty years and by exercising the greatest care in its administration and never using at one time an amount greater than that "of a very small pea," he had been able to avoid accidents. But he added that the use of such ointments had become common and with such use there had followed the inevitable serious accidents. It is of interest to note that Sabouraud's ointment, applied in quantities about the size of a pea and under his direction, contained only 1 per cent thallium acetate; Koremlu, sold indiscriminately to the public, contained in excess of 7 per cent and was to be used *ad lib.*

Dr. Wimmer also apparently overlooked the article by Dr. E. William Abramowitz that appeared in the *New York State Journal of Medicine*, March 1, 1929, in which the author stated that Sabouraud had abandoned the thallium preparation "on account of the toxicity of the drug"; and the article "Pharmacologic and Toxicologic Aspects of Thallium," published by Dr. M. J. Ormerod in the *Canadian Medical Association Journal*, December, 1928, in which attention also was called to Sabouraud's abandonment of the use of thallium because of its toxicity.

The most noticeable thing about Dr. Wimmer's letter, however, was a postscript or addition at the bottom of the letter, reading:

> "It is distinctly understood that the above letter and opinion contained therein are not to be used for publication or advertising purposes in any manner whatever."

Yet, as a matter of fact, copies of the Wimmer letter, in its entirety, were used as levers to get department stores that were questioning the wisdom of selling Koremlu to continue to handle it.

The New York City Department of Health was in a peculiarly favorable position to protect the citizens of the largest city in the country by prohibiting the sale of Koremlu Cream. It appears, however, that the reports of Pease and Wimmer, and possibly others, were too strong for the Department. At any rate, the Koremlu people, under date of May 1, 1931, in a letter to a department store, quoted the clean bill that had been given their product by Drs. Pease and Wimmer, and then added:

> "This information is concurred in by our consulting chemist, Dr. Sattler, professor of chemistry at Brooklyn College . . . On March 31 the Board of Health of the City of New York passed Koremlu Cream as a harmless cosmetic."

It might be added that the Bureau of Investigation has received and answered hundreds of letters of inquiry regarding the use of Koremlu. These inquiries have come from women who were using or were thinking of using the stuff; they have come from physicians whose patients were using it, from attorneys whose clients had been poisoned by it, from department stores that were selling it, from Better Business Bureaus, etc. In all of those instances, the Bureau of Investigation stressed the belief, based upon indisputable facts, that Koremlu Cream was a viciously dangerous preparation and had no place as a cosmetic, even if a warning had accompanied the sale of it. As a matter of fact, not only has no warning accompanied its sale, but it has been specifically and directly advertised as harmless.

Now comes the sequel: The Chicago *Tribune* of Sunday, July 17, 1932, carries the following item:

> **Lists Liabilities as Millions;**
> **Assets Now at Only $2.93**
>
> NEW YORK, July 16.—[Special]—A voluntary petition in bankruptcy was filed by Koremlu, Inc., depilatories, of 11 West 42d street, today, listing liabilities at $2,448,745 and assets at $2.93. Liabilities in large part consisted of damage suits pending in the courts. The largest amounts asked, $150,000 in each case, are demanded by Virginia Leonard and Ernest E. Leonard, whose addresses were not given. Another claimant, Irene Freidberg, is suing for $100,000. Other amounts demanded range down to a few hundred dollars.

From this, it appears that Koremlu, as such, is nearly out of the picture. There seems to be accumulating evidence, however, that the individuals, or at least some of the individuals, who have been connected with the exploitation of Koremlu as a depilatory have decided that there is too much money to be made in the depilatory business to abandon it, even if dozens of women have been injured by their old product. There is now appearing on the market an alleged depilatory called "Croxon." It emanates from the same office as that of Koremlu. Croxon, Inc., was brought into existence January 29, this year, with an authorized capital of 2,000 shares of common stock at no par value. The president of the concern is said to be one A. W. Lublin. Croxon, according to an advertisement in the July, 1932, issue of *McCall's Magazine*, "will permanently destroy both hair and roots in three to six months."

Even though we are not yet in a position to publish the complete ingredients of Croxon, it can be said unequivocally that Croxon will not destroy both hair and roots, either in three months or three years. Of course, if the Croxon concern can get impressionable women to use this stuff for a period of half a year at $5 and $10 a jar, they will, at the end of that time, have made considerable money.

In connection with the exploitation of Croxon, a letter received from the National Better Business Bureau states that Helene Lemberger, Ph.D., of the Department of Biochemistry of the New York Post-Graduate Medical School and Hospital, has given the Croxon concern a certificate to the effect that Croxon contains no compounds that are toxic when applied as directed, that it removes superfluous hair when applied as directed, and that it prevents the regrowth of the hair when applied over a period of one year. Dr. Lemberger also has a postscript or addendum to her certificate, to the effect:

> "It is my understanding that neither this letter, my name, nor the name of this institution will be used in advertising."

Food Allergy.—Hypersensitiveness to the proteins of certain kinds of food is more common than is generally realized and may show itself by various forms of reaction. The appearance of an urticarial rash, and occasionally vomiting and diarrhea, in some people, following the ingestion of shell-fish (for example, oysters) has been recognized for a long time. But proteins from many other foods may produce allergic reactions in susceptible individuals, and, moreover, it would appear that the exciting agent need not necessarily be a protein, but that nonnitrogenous substances may possibly be responsible in some cases.—Kennedy, A. M.: A Note on Food Allergy, *Brit. M. J.* **1:**1167 (June 25) 1932.

Correspondence

TOXICITY OF TRICHLOROETHYLENE

Promotional activities, seeking the extension of industrial uses of trichloroethylene, frequently fail to disclose the toxic nature of this chemical and the practical dangers that may attend its use. Trichloroethylene (C_2HCl_3) is a chlorinated hydrocarbon, similar in qualities to chloroform, carbon tetrachloride, and ethylene dichloride. It is recommended for use as a dry cleaning agent, as a cleanser of metal parts, as a fumigant, as a solvent for insecticides, as a general degreasing agent, and as a solvent for many oils, fats, greases, gums, tars, waxes and rubber. The product has been standardized.

Basically, the deleterious action of trichloroethylene is like that of carbon tetrachloride. It is customary to rate trichloroethylene as having a toxicity of 1.7 when that for carbon tetrachloride is arbitrarily fixed at 1.0. From personal experience with animals (rabbits) the toxicity of the two substances is regarded as almost equal, both in the degree of severity and in the nature of the harm produced. In industry, trichloroethylene may enter the body through the breathing of vapors or through the skin. If the concentration is great (such as 10,000 parts of the vapor or more per million of air), manifestations center about the narcotic action of trichloroethylene. Sustained exposure to such high amounts is unusual. After the threshold of danger has been reached, the extent of damage in a measure depends on the concentration and the length of exposure time. The mildest degree may be represented by moderate respiratory irritation, nausea, headache and vomiting. Severer involvement may be characterized by pronounced bronchitis, diffuse hemorrhage into pulmonary tissues, pneumonia and enteritis. At this stage there may arise an acute splenitis, nephritis or hepatitis. Delayed poisoning may arise as late as sixty hours after initial exposure. This fulminating type is the result of acute degeneration of the liver similar to delayed chloroform poisoning. In connection with this process, guanidine may be formed in the liver or pass the liver barrier. Guanidine poisoning or a condition akin to that state dominates the clinical state.

In rabbits, the threshold of harm after inhalation has been found by me to lie below 500 parts per million of air. As one liquid cubic centimeter of trichloroethylene yields, on evaporation under room condition, some 271 cc. of vapor, this danger is readily attained under conditions of trivial exposure. Briefly, the results obtained from the inhalation of trichloroethylene vapors are:

20,000 parts per million produced death within 2 hours
10,000 parts per million produced death within 2½ hours
5,000 parts per million produced death within 14 to 28 hours
1,000 parts per million produced death within 28 to 41 hours
500 parts per million produced death within 19 days in one animal. Another animal was given 500 parts per million seven hours a day for twenty-four days. Desperate illness was produced. This animal was killed for autopsy.

The threshold of danger from skin absorption may not readily be determined, owing to the local skin damage produced when applications are kept in place for several days or weeks. However, it has been determined from experiments that:

7.7 cc. per kilogram 3 times daily on skin produced death within 4 days
6.6 cc. per kilogram 3 times daily on skin produced death within 5 days
3.8 cc. per kilogram 3 times daily on skin produced death within 5 days
3.6 cc. per kilogram 3 times daily on skin did not cause death within 14 days
Animal was very ill. Was killed for autopsy
1.2 cc. per kilogram 3 times daily did not cause death within 7 days
Animal was, however, made ill. Was killed for autopsy.

Any manufacturer contemplating the use of trichloroethylene may find in it many desirable qualities. Too, in the absence of closed systems of operation, he may find in this solvent the source of disaster for exposed workmen.

Carey P. McCord, M.D., Cincinnati.

BOOKS ON THE HUMAN VOICE

To the Editor:—I have read the review of Dr. Leon Felderman's book on "The Human Voice" in The Journal, June 25. The inference is drawn that your reviewer is not familiar with the literature on this important subject, for he says: "While the vocalist will find much of interest and value in this volume, its real significance lies in the initiation of a unique and valuable subject for book making."

There have been many books on this subject published both here and abroad over a period of years, the best and most important of which is Sir Morell Mackenzie's "Hygiene of the Vocal Organs." Sir Morell wrote his excellent volume at a time when laryngology was still young, and yet it would be very difficult to improve on it even at this date. It is scholarly, comprehensive and absorbingly interesting from cover to cover.

In Germany there have been many writers on the singing problem and on every aspect of voice. Among them are Imhofer, Flatau and Moritz Schmidt. In America, excellent works have come from the hands of the late Dr. Holbrook Curtis and the late Dr. Frank E. Miller. Other voice physicians have written and published monographs on the subject.

If your reviewer will be good enough to turn to the index, he will find a modest volume entitled "Hygiene of the Voice," by Irving Wilson Voorhees, M.D., which came from the press of the Macmillan Company in 1923. This book is still alive in spite of its ten years, which is, I suppose, a hoary age as modern books come tumbling from the printery.

I. W. Voorhees, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

STUDY OF STERILITY

To the Editor:—I have a patient under my care, a woman, aged 30, married three years, who has had two miscarriages, one at 2½ months and the other at 5½ months. Both husband and wife are in good physical condition. Her basal metabolism is minus 10. Her menstrual period is always associated with dysmenorrhea, nervousness and vertical headaches. She has bled slightly every two weeks for the last six months. Since her last miscarriage, about a year ago, she has not become pregnant. I have put her on thyroid ovarian substance and Hormotone tablets. Neither seems to have any effect on her condition. There is no venereal history. Kindly tell me what seems to be wrong with the patient and how can I make pregnancy possible for her, as she wants a baby badly. Kindly omit name.

M.D., Chicago.

Answer.—Even though the patient has been pregnant twice, it is advisable to make a careful examination of the husband's spermatozoa. This should include not only detection of their motility but also an approximation of their number, an analysis of the relative proportion of abnormal spermatozoa, and a search for leukocytes and other abnormalities in the semen. The male is responsible not only for a large proportion of sterile marriages but also for a fair number of miscarriages. Unfortunately, no way of determining which sperm are incapable of producing normal, full-term offspring is available.

If the examination of the semen proves it to be satisfactory, a careful bimanual examination of the patient should be made to determine the condition of the generative tract. The cervix should be inspected through a speculum to see whether a so-called erosion or other abnormality is present. Cervical disease is frequently responsible for infertility. If an "erosion" is present, it may quickly and satisfactorily be treated by means of the nasal tip electrical cautery. If any other anomaly in the genitalia is found, an effort should be made to correct it. If the pelvic organs, including the cervix, are apparently normal, a Rubin test should be performed to determine whether or not the tubes are patent. Even though the patient has been pregnant twice, there may have been an infection after the second miscarriage which resulted in closure of the tubes.

Drugs are seldom effective. A basal metabolism rate of minus 10 is usually not abnormal. Empirically the administration of thyroid or of compound solution of iodine U. S. P. (Lugol's solution) is worth while because occasionally these help, especially in cases in which women have low metabolic rates. Hormotone and other similar substances rarely yield satisfactory results. Ovarian preparations are useless for these cases. The recurrence of bleeding every two weeks is abnormal. Menstruation is controlled by the glands of internal secretion, principally the pituitary. The latter acts on the endometrium, usually through the ovaries. The logical way to control menstruation would be to administer a substance that would regulate the pituitary gland. Thus far no specific way of doing this has been found, except perhaps by treatment with roentgen rays, but this form of therapy must be used with great care. Large doses of extract of the anterior lobe of the pituitary may be tried, but not much can be promised. The 1931 edition of New and Nonofficial Remedies, page 309, states that oral administration has not been found of value. Occasionally a dilation and curettement not only leads to pregnancy but also helps regulate the menstrual flow. However, this should not be performed until it is certain that the husband's spermatozoa are normal, the cervix is healthy, the tubes are patent and no abnormalities are present.

PERIARTHRITIS OF THE SHOULDER

To the Editor:—In a case of periarthritis of the shoulder with definite limitation of motion at the extremes of the ranges, the cause of the periarthritis is presumably a tear in the subscapularis, and of the limitation of motion, adhesions. Would a roentgen study of the diseased shoulder as compared with the normal reveal diminution or increase in the distance between the circumference of the head of the humerus and the circumference of the glenoid cavity, or a rotation of the upper end of the humerus, so that the intertubercular groove, for example, faces differently than the normal? Is there a method of measuring the rotations of the scapula?

ISAAC MERLIS, M.D., Boston.

ANSWER.—The term periarthritis of the shoulder is one that has been used loosely to describe a variety of signs, symptoms and pathologic conditions, including subdeltoid bursitis or subacromial bursitis, calcium deposits in the supraspinatus and infraspinatus tendons, sprain or tear of the capsule of the shoulder joint, subcoracoid bursitis, biceps tendovaginitis, traumatic periostitis, deltoid myositis and arthritis, adhesions around the joint, and tendonitis.

The correspondent evidently means a tear in the supraspinatus rather than the subscapularis. The limitation of motion is probably due to adhesions in and around the joint.

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In answer to the second question, there is a method of measuring rotation of the scapula, but it is not accurate and not of great practical importance. By inspection and palpation, the rotation of the shoulder can be determined by moving the humerus. This should be compared with the other side, if it is normal.

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WILLIAM EHRHARDT, M.D., Fairbanks, Texas

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M.D., Missouri.

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William H. Rice, M.D., Ashland, Ky.

Answer.—Accumulated experience tends to prove that cases of heat cramp are at least in part attributable to excessive elimination from the body of chlorides in perspiration. Fatigue and gastro-intestinal disorders may be the result and not the cause, as implied in this query. However, in some instances antecedent disorders may be a factor in heat cramp cases.

Under suitable conditions as to temperature, humidity, muscular exertion and at times emotional state, as much as 6 liters of fluids may be lost from the adult human body in a single twenty-four hour period. However, the average daily loss of body fluids as sweat, under conditions of muscular exertion and heat, is much less, and under conditions attending most occupations does not exceed 3 liters.

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In any assumed instance in which the chloride content is average (6.5 mg. per cubic centimeter) and in which the sweat output is 3,000 cc. during the twenty-four hours, the loss from the body of chlorides approximates 20 Gm., an amount that certainly may not be replaced by chlorides normally in foods and drinks.

Excessive and prolonged sweating eventuates in dehydrated tissues, gastric hypo-acidity, acidosis, fatigue, exhaustion, and muscular and gastro-intestinal cramps. These conditions are not alleviated by water alone and are in fact in some measure aggravated by water intake.

Salinized drinking water (sodium chloride from 0.25 to 1 per cent) goes far in the prevention and control of that form of fatigue or exhaustion occasioned by mineral losses from the body.

In any industry there may be workmen for whom this high intake of chlorides may not be advantageous. The introduction of salinized drinking water in industry should be under the guidance of a physician.

HERNIA IN A CHILD

To the Editor:—A well nourished, well developed boy, aged 1 year, has a big right sided inguinal hernia, the size of the child's fist. He is active, just commencing to stand alone. His appetite is fair but not good; the bowels tend to irregularity, although not constipated; there are occasional "gas pains." The hernia is easily reducible. What shall be done? Truss? Strapping with adhesive plaster? Operation? Please omit name.

M.D., New Jersey.

Answer.—The rather large size of the inguinal hernia would make it seem unlikely to be cured by the use of a truss. However, it might be worth while to fit a spring truss carefully and to leave it on all the time. If, on removal of the truss after a few months, the hernia comes out easily, operation should be done. The child is old enough to be operated on at any time he is in good health.

Some rather large hernias are apparently cured in infants under 1 year of age if a truss is properly fitted and kept on all the time. As the child grows larger, trusses must be used until it is felt safe to remove the support.

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M.D., West Virginia.

Answer.—The consensus among obstetric authorities is that in most cases a torn cervix should be sutured immediately after delivery. This applies to lacerations that cause bleeding and also to tears more than 1 cm. in length, even if there is no bleeding as a result of them. Small tears usually need not be sutured, because after the cervix has undergone involution these defects are extremely small and do not produce ill effects. However, a cervix should be sutured only in a clean hospital and only when there is sufficient assistance and good light. In a home where there is poor light and no assistance it is best not to repair cervical lacerations unless they produce hemorrhage. Even then it might be more expedient and safer to pack the uterus and vagina firmly. Without proper aid, the cervix cannot be repaired properly. Furthermore, in most homes and also in some hospitals there is great risk of infection. An experienced obstetrician working in a clean hospital should examine the cervix after every vaginal delivery, especially operative ones, and repair all large tears. This practice, however, should not be followed by inexperienced physicians. The latter can more safely wait until the patient returns for an examination six or eight weeks after delivery and then if cervical "erosions" are present he can successfully treat the "eroded" areas with an electric cautery. If a patient has fever during labor, the cervix should not be repaired immediately after delivery, no matter how extensive a laceration is, unless there is profuse hemorrhage as the result of the tear.

ALLERGY IN A CHILD WITH COMPLICATION OF RHINITIS AND ETHMOIDITIS

To the Editor:—A boy, aged 6 years, has an ethmoiditis of several months' duration. The results of general physical and clinical examination are negative except for parents' food allergy. The child's adenoids and tonsils were removed three years ago, and the adenoids were removed a second time two weeks ago. The question of diet is what I wish to be advised about. He eats all food except tomatoes, corn, beans, milk and its products, chocolate and eggs because of a moderate degree of allergy. He eats freely of oranges, spinach and other greens; meats; carbohydrates, as potatoes; several cubes of cane sugar; bread and cake. The bowel and kidney elimination are normal. He is several pounds overweight. Have you any further suggestions?

C. Arbuthnot Campbell, M.D., Steubenville, Ohio.

Answer.—The treatment of protracted rhinitis and sinus infections, including ethmoiditis, presents great difficulties at times. Local treatment of the mucosa and operative intervention do not always give permanent results. For a time the allergic reaction of the patient was thought to be the principal and underlying cause. The offending substances were sought after and either they were eliminated or attempts were made to desensitize the patient.

This treatment has been thought by many to be successful in a considerable number of instances. There is, however, a group of patients whose upper respiratory tract is continuously affected. In one instance the mucous membranes are red, swollen and secreting profusely; in the other they are pale, because of a vasomotor constriction. A group of American rhinologists, among whom may be mentioned D. C. Jarvis of Barre, Vt., and Ira Frank of Chicago, have considered that these nasal conditions are an expression of metabolic variations. The red turgescent mucous membrane indicates an increase in the acid constituents of blood and tissues. The pale mucosa indicates an increased alkalinity. The rhinologists mentioned have found that the chronic rhinitis and ethmoiditis are most frequently due to vasoconstriction with pale mucous membranes, associated with an increased alkalinity of blood and tissues.

The treatment of this condition is directed, as they think, against the underlying metabolic disorder. To render the body less alkaline they advise the administration of nitrohydrochloric acid, from 3 to 5 drops well diluted in water, and an acid forming diet, which consists of meat, fish, oatmeal, rice, prunes, plums, cranberries and other acid producing foods of this type.

The group who are using it are encouraged by their results, and the treatment is so simple that it may be used without doing harm.

DOSAGE IN HIGH VOLTAGE ROENTGEN THERAPY

To the Editor:—I note an editorial in the April, 1932, issue of *Radiology* by Arthur W. Erskine of Cedar Rapids, Iowa, in which he states that roentgen therapy with 200 kilovolts does not possess any peculiar therapeutic virtue not possessed by 140 kilovolts, except that treatment with 200 kilovolts saves time for the doctor and permits him to treat many patients rapidly, this time factor being so small that it would be negligible in the ordinary day's work. On the other hand, he states that 140 kilovolts will deliver any requirement of deep therapy to any part of the body, the time for each area being one and one-half times as long, and more areas are necessary. Do you agree with the statements of this author, or do you still maintain that deep therapy can only be satisfactorily given with 200 kilovolts or higher?

Emerson F. Hoover, M.D., San Diego, Calif.

Answer.—The editorial by Erskine meets the approval of many roentgenologists. It is a basic principle that the bi chemical effect depends on the amount of x-rays actual absorbed by the cellular structures; therefore the x-rays mu be delivered to the part involved. The term deep therapy h come into use since the advent of apparatus capable of [illegible] ing a pressure (voltage) of 200,000 or more, and, as sta Dr. Erskine, by the use of these higher voltages the rates. Hormotone and other similar substances rarely yield satisfactory results. Ovarian preparations are useless for these cases. The recurrence of bleeding every two weeks is abnormal. Menstruation is controlled by the glands of internal secretion, principally the pituitary. The latter acts on the endometrium, usually through the ovaries. The logical way to control menstruation would be to administer a substance that would regulate the pituitary gland. Thus far no specific way of doing this has been found, except perhaps by treatment with roentgen rays, but this form of therapy must be used with great care. Large doses of extract of the anterior lobe of the pituitary may be tried, but not much can be promised. The 1931 edition of New and Nonofficial Remedies, page 309, states that oral administration has not been found of value. Occasionally a dilation and curettement not only leads to pregnancy but also helps regulate the menstrual flow. However, this should not be performed until it is certain that the husband's spermatozoa are normal, the cervix is healthy, the tubes are patent and no abnormalities are present.

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Answer.—The term periarthritis of the shoulder is one that has been used loosely to describe a variety of signs, symptoms and pathologic conditions, including subdeltoid bursitis or subacromial bursitis, calcium deposits in the supraspinatus and infraspinatus tendons, sprain or tear of the capsule of the shoulder joint, subcoracoid bursitis, biceps tendovaginitis, traumatic periostitis, deltoid myositis and arthritis, adhesions around the joint, and tendonitis.

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To the Editor:—A boy, aged 6 years, has an ethmoiditis of several months' duration. The results of general physical and clinical examination are negative except for parents' food allergy. The child's adenoids and tonsils were removed three years ago, and the adenoids were removed a second time two weeks ago. The question of diet is what I wish to be advised about. He eats all food except tomatoes, corn, beans, milk and its products, chocolate and eggs because of a moderate degree of allergy. He eats freely of oranges, spinach and other greens; meats; carbohydrates, as potatoes; several cubes of cane sugar; bread and cake. The bowel and kidney elimination are normal. He is several pounds overweight. Have you any further suggestions?

C. Arbuthnot Campbell, M.D., Steubenville, Ohio.

Answer.—The treatment of protracted rhinitis and sinus infections, including ethmoiditis, presents great difficulties at times. Local treatment of the mucosa and operative intervention do not always give permanent results. For a time the allergic reaction of the patient was thought to be the principal and underlying cause. The offending substances were sought after and either they were eliminated or attempts were made to desensitize the patient.

This treatment has been thought by many to be successful in a considerable number of instances. There is, however, a group of patients whose upper respiratory tract is continuously affected. In one instance the mucous membranes are red, swollen and secreting profusely; in the other they are pale, because of a vasomotor constriction. A group of American rhinologists, among whom may be mentioned D. C. Jarvis of Barre, Vt., and Ira Frank of Chicago, have considered that these nasal conditions are an expression of metabolic variations. The red turgescent mucous membrane indicates an increase in the acid constituents of blood and tissues. The pale mucosa indicates an increased alkalinity. The rhinologists mentioned have found that the chronic rhinitis and ethmoiditis are most frequently due to vasoconstriction with pale mucous membranes, associated with an increased alkalinity of blood and tissues.

The treatment of this condition is directed, as they think, against the underlying metabolic disorder. To render the body less alkaline they advise the administration of nitrohydrochloric acid, from 3 to 5 drops well diluted in water, and an acid forming diet, which consists of meat, fish, oatmeal, rice, prunes, plums, cranberries and other acid producing foods of this type.

The group who are using it are encouraged by their results, and the treatment is so simple that it may be used without doing harm.

DOSAGE IN HIGH VOLTAGE ROENTGEN THERAPY

To the Editor:—I note an editorial in the April, 1932, issue of *Radiology* by Arthur W. Erskine of Cedar Rapids, Iowa, in which he states that roentgen therapy with 200 kilovolts does not possess any peculiar therapeutic virtue not possessed by 140 kilovolts, except that treatment with 200 kilovolts saves time for the doctor and permits him to treat many patients rapidly, this time factor being so small that it would be negligible in the ordinary day's work. On the other hand, he states that 140 kilovolts will deliver any requirement of deep therapy to any part of the body, the time for each area being one and one-half times as long, and more areas are necessary. Do you agree with the statements of this author, or do you still maintain that deep therapy can only be satisfactorily given with 200 kilovolts or higher?

Emerson F. Hoover, M.D., San Diego, Calif.

Answer.—The editorial by Erskine meets the approval of many roentgenologists. It is a basic principle that the biochemical effect depends on the amount of x-rays actually absorbed by the cellular structures; therefore the x-rays must be delivered to the part involved. The term deep therapy has come into use since the advent of apparatus capable of delivering a pressure (voltage) of 200,000 or more, and, as stated by Dr. Erskine, by the use of these higher voltages the actual time consumed in delivering a given dose is decreased; however, it is still a question as to its superiority, and time alone will tell whether a rapid or slow delivery of a given amount of x-rays is desirable, because there is no definite concept as to the absorptive powers of organic materials, for reactions are judged empirically.

PREVENTION OF CHIGGERS

To the Editor:—As I have the misfortune to possess a thin, white skin, my life during the summer months is rendered almost intolerable by chiggers. If I cross the smallest garden patch I get them in swarms and even get them in motion picture theaters where they have been shaken off other people's clothes. I am writing to ask whether you can suggest any nonobjectionable spray for my clothing which would keep them off. Please omit name.

M.D., Texas.

Answer.—The chigger, or red-bug, is an annoying and sometimes serious pest of man. It is especially abundant in the South, where it is prevalent from early spring until killing frosts occur in the fall. The chigger is the first or six-legged stage of a large velvet mite. The chigger attaches itself to various animals and birds, fills with blood, drops off, molts its skin, and in subsequent stages is a scavenger and not harmful in any way. The presence of long grass, weeds and bushes not only protects the chiggers but encourages small animals which serve as hosts. Elimination of such favorable environment around the home is an important step in chigger control. The most effective way of protecting the person from attack is by applying sublimed sulphur to the skin and lower parts of the clothing. For hiking, bootees should be worn over close fitting trousers. A light application of kerosene oil around the shoe top will help keep the chiggers off. We know of no nonobjectionable spray which can be applied to the clothing.

PURULENT RHINITIS OR SUPPURATIVE SINUSITIS

To the Editor:—For a year and a half I have been afflicted with purulent rhinitis. I have tried practically everything, douches, atomizers, nebulizers and all the liquids for dispersion in the lower and upper nasal passages. I have been attended for weeks by one of our foremost nose and throat specialists with high tampons of 10 per cent mild silver protein with absolutely negative results. Having read about the now much more extended use of mercurochrome-220 soluble in The Journal, I wonder whether you know of any case treated with it. Otherwise, can you make any suggestion to help me to get rid of the rhinitis? Please omit name.

M.D., New York.

Answer.—It is most likely that the so-called purulent rhinitis is really a suppurative sinusitis. Rarely does the mucous membrane of the nose itself produce much pus; if it is present, it is almost invariably the result of drainage from one or more of the nasal accessory sinuses. The use of mercurochrome-220 soluble or other medicaments applied to the nose will hardly affect the nasal sinuses. Results cannot be expected unless the solution is actually introduced into the sinuses themselves, either by means of puncture with a trocar, as in the case of the maxillary sinus, or by instillation with a cannula into the natural opening of the antrum or the sphenoids. The most rational procedure is to have x-ray films made of all the nasal accessory sinuses in order to determine, if possible, which sinuses are infected, and then institute conservative treatment to promote drainage of the involved sinuses as the first procedure. If this does not suffice, one of the conservative operations would probably be indicated. The extent of the operation and the type selected will depend on the amount of disease found and the obstinacy of the infection, as well as its reaction to conservative treatment. In some cases of long duration, radical sinus surgery may be necessary.

SALIVATION DURING PREGNANCY

To the Editor:—A woman, aged 26, a primipara, whose physical history is negative, is in the third month of gestation. She complains of constant and excessive salivation. Kindly outline treatment. Please omit name.

M.D., New York.

Answer.—Fortunately, excessive salivation, or ptyalism, is a rare complication of pregnancy because the treatment of this condition is unsatisfactory. Some cases may be due to a reflex neurosis incident to pregnancy, but in most instances the condition is a form of toxemia somewhat comparable to hyperemesis gravidarum. When a neurotic element seems to be present, suggestion and psychotherapy may be tried. Since some women lose as much as a liter and more of fluid every twenty-four hours as a result of the constant drooling, and since more fluid is usually lost because of the nausea and vomiting which is a frequent accompaniment of salivation, it is most important that the patient receive large quantities of liquids. The quickest and most certain means is subcutaneous administration of at least 2 liters of physiologic solution of sodium chloride or Locke's solution daily. A diet limited to milk may be of great benefit. Drugs are rarely beneficial and the most helpful is sodium bromide, of which between 7 and 8 Gm. should be given in divided doses each day. Atropine may help, but it may also be harmful; hence great care should be exercised in using this drug. Sometimes the salivation ceases spontaneously after the fifth month, but usually it does not disappear until after delivery. It is important to examine the saliva for hydrochloric acid because it may be that the fluid which escapes from the mouth is not saliva but gastric juice. Salivation may recur in subsequent pregnancies.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Obstetrics and Gynecology: The examination will be held in nineteen different cities in the United States and Canada, Oct. 22. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board of Otolaryngology: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

National Board of Medical Examiners: The examinations in Parts I and II will be held at all centers where there are five or more candidates available in a Class A medical school, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

New Hampshire: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

Oklahoma: Oklahoma City, Sept. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

Porto Rico: San Juan, Sept. 6. Sec., Dr. O. Costa-Mandry, Hospital Mimiya, Santurce, San Juan, P. R.

Illinois April Report

Mr. Paul B. Johnson, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, April 12-14, 1932. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-eight candidates were examined, 52 of whom passed and 6 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1904)	75
Chicago Medical School		(1931)	75, 80*
School of Medicine of the Division of the Biological Sciences, University of Chicago		(1931)	83*
Loyola University School of Medicine		(1931)	82, 83*
Northwestern University Medical School		(1931)	82,* 82,* 82,* 84, (1932) 79,* 79, 79, 79, 79, 80, 80, 82, 82, 83, 83,* 84, 84, 84, 85, 86
Rush Medical College		(1931)	75, 76,* 77, 78, 79, 86,* (1932) 75,* 76, 80, 81, 82, 83, 84, 84,* 85,* 86
University of Illinois College of Medicine		(1931)	78, (1932) 79,* 81, 82, 84,* 84
[illegible] School of Medicine		(1925)	77
[illegible] College		(1929)	85*
[illegible]		(1930)	83*
[illegible]		(1928)	81

College	FAILED	Year Grad.	Per Cent
Loyola University School of Medicine		(1931)	66
Northwestern University Medical School		(1932)	74
Rush Medical College		(1932)	70
McGill Univers[illegible]		(1926)	69
University of N[illegible] and Surgery		(1925)	72,† (1930) 62†

* Licenses withheld pending payment of fee.
† Verification of graduation in process.

Wyoming June Report

Dr. W. H. Hassed, secretary, Wyoming State Board of Medical Examiners, reports the written examination held at Cheyenne, June 13, 1932. The examination covered 12 subjects and included 114 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. One physician was licensed by reciprocity. The following college was represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1932)	83

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1914)	Kansas

Book Notices

Physiology of Bacteria. By Otto Rahn, Professor of Bacteriology, Cornell University, Ithaca, N. Y. Cloth. Price, $6. Pp. 438, with 42 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1932.

Students of the physiology of bacteria have at their disposal three modern books: Buchanan and Fulmer's comprehensive three-volume treatise, Marjory Stephenson's excellent discussion of bacterial metabolism, and now this thoroughgoing monograph. Rahn's book is in aim, if not in scope, somewhat more ambitious than either of the others in that the author attempts to relate the physiology of bacteria to general physiology or general biology and strives to keep in the foreground the "new conceptions . . . brought into general physiology through the study of bacteria." The four sections of the book —endogenous metabolism, energy supply of the cell, growth, and the mechanism of death—are dealt with as "the four functions which are indispensable for life" (p. 7). Within these limits, Rahn's discussion shows understanding and generally clear thinking. As in any book of this sort, a critical reader will meet with some surprises. There is no mention of the permeability of cell protoplasm and no reference whatever to the work of Overton or Osterhout with its possible connotations for bacteriologic problems. The author was surely nodding when he wrote (p. 368) "Bacteria, which by chemical poisoning have lost the power to multiply, may regain it if an antidote is used. This complicates the definition of death." On page 311 the statement is made without any apparent misgiving that "Lipman (1931) has succeeded in demonstrating living bacteria in coal." The style is sometimes opinionated, involved or careless and contains occasional Teutonisms in spite of the help given the author by his friends. "The causes of death might have been placed before the chapter on growth, but it seemed too odd to discuss death before growth [p. 8]; . . . it has been observed quite early" (p. 97). The book is well printed and few typographic errors have been noticed, one of the most obvious being on page 389. There will be general agreement among bacteriologists that Rahn has made a useful and important contribution to his subject.

Pathologie und Klinik in Einzeldarstellungen. Herausgegeben von L. Aschoff, H. Elias, H. Eppinger, C. Sternberg und K. F. Wenckebach. Band V: Mass und Zahl in der Pathologie. Von Professor Dr. Robert Roessle, Direktor des Pathologischen Instituts der Universität Berlin, und Dr. Frédéric Roulet, Oberarzt am Pathologischen Institut der Universität Berlin. Paper. Price, 16 marks. Pp. 144, with 27 illustrations. Berlin: Julius Springer, 1932.

In a brief introduction, Roessle and his associates stress the significance of "number and measure in pathology." Without disregarding the limitations of the methods, they consider them of great importance not only from a didactic point of view but also as offering the only possible way for comparison of the constitutional and racial data collected in the different parts of the world. They also point out that, at least so far, physical anthropology has been based almost exclusively on the somatology of the body surface and the extremities and that splanchnology as an anthropologic subject practically does not exist. It is for the purpose of stimulating further studies in this line that the little monograph has been written. In many tables and diagrams the weights of the different organs are given and the material is arranged according to age and sex. In addition to the arithmetical means of the organ weights and their relations to the body weight, one also finds in these tables the standard deviations and the middle errors. In order to obtain some information about the musculature, Roesslé selected the right brachial muscle, which can be easily dissected out without much disfiguration of the body. Although the musculature of the body is composed of hundreds of individual organs, it is in the sense of the totality that the experiences collected on one of these organs can be regarded as representative of the entire group. There are also chapters on the body weight and length, on the rate of growth from the earliest stages of embryonic development, on the correlation of the organs, on the most important constitutional indexes, and on the signs of maturity. Because of the enormous material collected and the clear and concise matter of presentation, the little book can be highly recommended to clinicians, pathologists and anatomists.

The Iron Content of Vegetables and Fruits. By Hazel K. Stiebeling, Senior Food Economist, Division of Economics, Bureau of Home Economics. United States Department of Agriculture, Circular No. 205. Paper. Price, 5 cents. Pp. 19. Washington, D. C.: Supt. of Doc., Government Printing Office, 1932.

This circular presents data on the iron content of 110 different forms, parts or varieties of fruits and vegetables. The succulent vegetables and fruits are divided into four groups on the basis of their iron content: poor source (mostly fruits and fruit juices), less than 0.00040 per cent; fair (approximately one-half fruits), from 0.00040 to 0.00079 per cent; good (potatoes, thick pigmented stalks and leaves), from 0.00080 to 0.00159 per cent; excellent (immature seeds of leguminous plants and thin green leaves), 0.00160 per cent or more. Much of the iron in plant tissue is associated with chlorophyll. As a class the green colored vegetables are of great importance for their iron content, the more liberal use of which may well be encouraged to improve the American diet. Physicians and dietitians will want to have this circular at hand for practical use.

Die Regulation des Säure-Basen-Haushaltes in der Schwangerschaft und ihre Störungen bei den Schwangerschaftstoxikosen. Von Dr. Karl Julius Anselmino, Privatdozent für Geburtshilfe und Gynäkologie an der Medizinischen Akademie in Düsseldorf. Sonderausgabe von Heft 6 der „Abhandlungen aus der Geburtshülfe und Gynäkologie und ihren Grenzgebieten," Beihefte zur „Monatsschrift für Geburtshülfe und Gynäkologie." Paper. Price, 4.80 marks. Pp. 75, with 11 illustrations. Berlin: S. Karger, 1932.

In the first part of this monograph the author presents information concerning the acid-base equilibrium of normal pregnancy. From his own studies and the reports in the literature, he concludes that an acidosis in pregnancy is a physiologic occurrence. In the second part of the book the causes of this type of acidosis are discussed and also the acid-base equilibrium in the toxemias of pregnancy. For his investigations the author made use of the method of electrometric titration of the weak acids in the serum filtrate. He believes that the physiologic acidosis of gestation is due to a change in the glands of internal secretion, especially to overactivity of the thyroid. In hyperemesis gravidarum there is a moderate increase in the fixed acids of the blood. In all the cases of nephropathy that were studied there was a diminution in the physiologic acid content of the blood. This is in accord with the results obtained by American authors but is at variance with the belief of German investigators. On the other hand, in the majority of cases of eclampsia there is a moderate increase in the fixed acids of the blood. There is no parallel between the extent of the acid changes in the blood and the severity of the clinical symptoms. The author's studies show that in eclampsia there is only a minor disturbance in the acid-base equilibrium, and when it is pronounced it is usually due to alterations in respiration and to alkalipenia and only rarely to an increase in the fixed acids of the blood. The monograph contains little that is new, but it is an excellent review of the subject. The author is well qualified to write on this subject because he and Hoffman have done much good work in this field.

Children Who Cannot Read: The Analysis of Reading Disabilities and the Use of Diagnostic Tests in the Instruction of Retarded Readers. By Marion Monroe, Research Psychologist, Institute for Juvenile Research and Behavior Research Fund. Cloth. Price, $2.50. Pp. 205, with 47 illustrations. Chicago: University of Chicago Press, 1932.

This monograph should be highly valuable to every one interested in the handicapped child. In it Dr. Monroe reports a fruitful study of children's reading disabilities, describing the analysis and treatment of a large number of patients ranging in age from 6 to 18 years. There is also included a description of the remedial measures taken in the case of an adult who had lost the ability to read after an attack of encephalitis. Some of the topics that should prove especially helpful to those engaged in problem case work are (*a*) the use of the reading index to distinguish special reading disability from general learning disability; (*b*) the diagnostic significance, at successive reading-grade levels, of varying frequencies of certain errors in word recognition and oral reading; (*c*) an elaborate and detailed analysis of causative factors in reading defects, and (*d*) a richly suggestive chapter dealing with methods appropriate for use in remedial instruction. As Dr. Monroe indicates in her discussion of the causative factors in reading defects, only a portion of the field was quantitatively studied. This will explain what many will feel to be a regrettable absence—the omission of appropriate emphasis on conceptual and methodological factors in reading deficiencies. The recommendations and suggestions offered in connection with the factors particularly studied, however, are likely to find wide acceptance because of the investigator's superb control of experimental technics and clear insight into children's difficulties. If this report is as widely read as it deserves to be, it should exert a powerful influence in breaking down the frequently encountered and utterly erroneous assumption that a child who is a poor reader is always stupid. By studying a large number of children with special reading disabilities, Dr. Monroe has clearly proved that, provided his needs are wisely diagnosed and met, the handicapped child's reading accomplishments can be brought more nearly in harmony with what his age, intelligence and other scholastic achievement lead one to expect from him. As in other fields, adequate diagnosis and intelligent remedial treatment in the field of reading can materially decrease the fatalities. Dr. Monroe has greatly refined and extended the teacher's knowledge of diagnosis and remedial instruction in reading.

Les maladies organiques du faisceau de His-Tawarra: Les syndromes coronaires. L'endocardite septale. L'infarctus septal. (Étude clinique et anatomique.) Par Ivan Mahaim, privat-docent à la Faculté de médecine de Lausanne. Préface du Prof. Michaud. Paper. Price, 80 francs. Pp. 595, with 188 illustrations. Paris: Masson & Cie, 1931.

The book begins with a detailed description of the anatomy of the bundle of His, a review of its physiology, and a discussion of the various clinical and pathologic-anatomic methods of its examination. Many will welcome the minute directions as to how to section the heart so as best to locate the lesions in the bundle and its branches and in the arteries and muscles that are intimately concerned. A point that is stressed by the author is that a distinction may and should be made between lesions that are inhibitive in nature and those that are irritative. The latter, such as may come from ischemia of the bundle or from inflammation or some types of degeneration, he terms evolutive; they lead to tachycardic manifestations. The bradycardic, on the contrary, are terminal or cicatricial; they may involve the Tawara node, the main trunk of the bundle, or its branches. He discusses the relations of these various forms to disorders of the coronary arteries, lesions of the valves, and inflammation of the myocardium, especially the septal portion. There is a separate chapter devoted to the bundle of His and congenital lesions of the septum. The final chapter takes up prognosis and treatment. The book is replete with facts, with a moderate admixture of theory. Critical readers may feel that at times the urge to simplify, clarify or vivify has led to descriptions, classifications and conclusions that need confirmation by later study and observation. There are many case histories with clinical and anatomic diagnoses. Abundant illustrations of pathologic specimens and electrocardiograms, together with ingenious diagrams and schemas, are helpful. An alphabetical bibliography of 1,032 items is found at the end of the volume. The book is definitely not adapted to the needs of the general practitioner. It will, however, make an appeal to the specialist in cardiology, who will find in it a rich field for study and speculation. We may well believe Michaud when in the preface he says that the volume is the result of patient and conscientious research that has extended over many years.

Modern Medical Treatment. By E. Bellingham-Smith, M.D., F.R.C.P., Physician and Lecturer on Medicine, St. George's Hospital, and Anthony Feiling, M.D., F.R.C.P., Physician and Lecturer on Medicine and Dean of the Medical School, St. George's Hospital. In two volumes. With an introduction by Sir Humphry Rolleston, Bart., G.C.V.O., K.C.B. Cloth. Price, $12 per set. Pp. 701 and 705. New York: William Wood & Company, 1931.

This is a valuable addition to the physician's library. The treatment of disease is carefully outlined and logically discussed from the standpoint of etiology and pathologic physiology. The index is voluminous and makes any problem in therapeutics readily accessible. It is to be highly recommended for those who wish to have close at hand a modern medical treatment.

Diätetik bei chirurgischen Erkrankungen: Kurzgefasste theoretische und praktische Anleitung zur Ernährung chirurgisch Kranker. Von Dr. F. W. Lapp und Dr. H. Neuffer, Krankenhaus der Stadt Wien. Paper. Price, 9 marks. Pp. 158, with 7 illustrations. Vienna: Julius Springer, 1932.

This book was written through the collaboration of a medical man and a surgeon from their experience in the surgical service of the large city hospital in Vienna. The work was done under the supervision of the heads of these departments. The importance of a carefully regulated diet is first discussed, with the many indications for a restriction of certain kinds of food and the increase of other types in surgical patients. Owing to the greater tendency for the development of thrombosis and embolism in the obese, it may be classed as one illustration for the necessity of preoperative management. The alteration of the normal function in various surgical conditions is discussed and the necessary changes are stated. General indications for regulating diet following operation are considered. Particular emphasis is placed on complicating diseases, such as diabetes, and a diet for each is included, at various periods before and after operation. Proper diets are described for the most frequent surgical diseases, with especial emphasis on the gastro-intestinal tract, the biliary system, the pancreas and the thyroid, together with operative complications. The dietetic treatment of the edemas based on their origin is considered in some detail. Numerous tables of diets are inserted in full, and a hundred recipes used in the hospital, largely in the preparation of a soft diet for patients before and after operation, are added. It should be the duty of every surgeon to become acquainted with this timely study. The book clearly and briefly explains the indications for the various diets; it includes the proper diet and, frequently, the actual method of preparation.

Handbook of Tropical Fevers. By N. P. Jewell, M.D., D.P.H., F.R.C.S.I., European Hospital, Nairobi, Kenya, and W. H. Kauntze, M.D., D.P.H., Deputy Director of Laboratory Services, Kenya. With a foreword by A. T. Stanton, C.M.G., M.D., F.R.C.P., Chief Medical Adviser to the Secretary of State for the Colonies. Cloth. Price, $6. Pp. 485, with 92 illustrations. New York: William Wood & Company, 1932.

One reads this volume with mixed feelings. Many parts of it are excellent, especially the introductory chapter on diagnostic routine in the presence of fever, and on unclassified fevers. This chapter could have been expanded with advantage into a full and meaty discussion, including detailed review of tropical changes in cosmopolitan fevers. The same may be said for the excellent section on malarial prophylaxis and on the epidemiology of plague, as well as the entire discussion of plague. In spite of these admirable sections, one is inclined to feel that the purpose of the book has not been fulfilled. The preface designs the book for the student who needs a sound knowledge of the basic facts of tropical disease. The subject matter is not sufficiently extensive and the treatment not sufficiently comprehensive to meet this object. In the second place, it is designed for practitioners in the tropics. The same objections hold. In the third place, it is designed for practitioners at home, apparently meaning in England. For all these objects, the standard textbooks of Manson-Bahr and Stitt are vastly more satisfactory.

The title at once limits the usefulness of the book and could well include, as has been said, a detailed discussion of cosmopolitan fevers in the tropics. The inclusion of amebiasis under fevers is of doubtful propriety. More detailed criticism of the chapter on amebiasis shows that the spelling "Entamoeba" is used in place of the more correct "Endamoeba." The old and nondescriptive term "vegetative" is retained. Stool culture is recommended for diagnosis in spite of the technical difficulties for the ordinary office laboratory and the small percentage increase of positives even in a well equipped laboratory. Personal hygiene and infected food handlers are not sufficiently stressed in prophylaxis. The description of amebic pathology omits granulomas and amebic foci in adjacent parts. The relationship of amebiasis to secondary bacterial infection is not discussed, either symptomatically or therapeutically. One would like more proof that an amebic patient can make a complete recovery without development of what is still called a "carrier" stage. One questions why great care in diagnosis is necessary even if Brumpt's classification of the E. histolytica group is accepted. The exact details of microscopic diagnosis are not nearly sufficient for either the student or the practitioner, and the need of qualified technical diagnosis is not emphasized.

The discussion of treatment is an uncritical hodgepodge, and the dosage of emetine advised is maximal. No caution is offered as to the toxicity of "stovarsol." The use of proprietary names is all too common in the entire book. On one page "stovarsol" is discussed and on the next page it is stated that "C. Craig" (no reference) suggests acetarsone.

One can seriously criticize the classification and diagnosis of bacillary dysentery. There should certainly be more discussion of the diagnosis of dysentery as a symptom. Treatment directions are too vague and the judgment on bacteriophage is doubtless too harsh. Under typhoid, the old idea is followed that digestion and assimilation are seriously decreased. The presentation of dietary treatment is incomplete and not in accord with newer accepted methods of high calory intake, nor is proper diet discussed in relation to prevention of complications.

The discussion of heat stroke is not clear. A chart of "hyperthermia" shows a maximum temperature of 103.8 F. One might take exception to the description of Sinton's alkaline treatment of malaria as most approved under all conditions. Also one cannot concur in the recommendation of 10 grains of quinine in 2 cc. of water for intramuscular injection. This method of dosage is painful, prone to cause abscess, and rarely or never necessary. Also the dose of 15 grains of quinine intravenously is excessive. A small dose, in smaller fluid volume, injected slowly, and repeated as needed, is preferable.

The authors ignore recent work on relapsing fever in the United States, and note only the tick and louse as vectors. The chapter on undulant fever is not comprehensive, treatment is poorly covered, and recognition of important Italian and American work is omitted.

In general, this volume enters a field already adequately covered, and, in spite of some excellent individual features, does not bring new values.

Handbuch der mikroskopischen Anatomie des Menschen. Herausgegeben von Wilhelm v. Möllendorff. Band II: Die Gewebe. Teil 3: Gewebe und Systeme der Muskulatur. Bearbeitet von Dr. Gösta Häggqvist, Professor an der Universität Stockholm. Paper. Price, 52 marks. Pp. 247, with 137 illustrations. Berlin: Julius Springer, 1931.

This book constitutes the third part of the second volume of the Handbook of Microscopic Anatomy, edited by Wilhelm von Möllendorff and published by Julius Springer. It deals with all three kinds of muscle, smooth, cardiac and skeletal, with their structure, their relation to connective tissues, their manner of working, their development and their life history, and the changes with age that develop in them. A fourth section deals with locomotor apparatus in general. Introducing the section devoted to each of these subjects is an historical review of the development of our knowledge and theories. This constitutes one of the most valuable features of the work. The account of the relations of muscle to connective tissue and tendons, the relations of tendon to bone and soft parts, and the manner in which muscle tissue and the locomotor apparatus in general works is based on fundamental questions of structure and function in a manner which is admirably clear and instructive and which sets forth the problems in a stimulating way. The illustrations have been selected with discrimination from the literature of all time. Some excellent ones are from Leeuwenhoek, dating back to 1694. The format is a demonstration of how much such work can contribute to the delight and satisfaction of study.

Foods in Health and Disease. By Lulu G. Graves, Consultant in Nutrition and Diet Therapy. Cloth. Price, $3.50. Pp. 390, with 50 illustrations. New York: Macmillan Company, 1932.

This book is primarily designed for the nonprofessional concerned with the broad subject of foodstuffs. It will find its most useful field as a reference book in the libraries of teachers of home economics, housewives, and women's clubs. The greater portion (277 pages) of the volume is devoted to detailed descriptions of food materials, their production, cultivation, composition, transportation and use in the home menu. In this respect it resembles an encyclopedia of foods. The account is fairly complete and includes many of the more exotic foodstuffs, such as chayote, orzata, topepo, chinkapin, banana flour, tangelo, cardoon and udo, which might not be found in many food books. The second portion (sixty-five pages), as stated in the introduction by the author, is intended as a brief discussion of the broad subject of food in disease. Therefore, the cursory treatment of many of the subjects leaves much unanswered in the mind of the reader. To supplement this defect, the author has included substantial bibliographies at the end of each chapter to suggest further reading. The chapter on preservation of foods and food infections, as well as an informative chart on cathartics, has merit.

Kurzwellentherapie: Die medizinische Anwendung kurzer elektrischer Wellen. Von Dr. Erwin Schliephake, Privatdozent für innere Medizin an der Universität Jena. Physikalischer Anhang von Dr. L. Rohde, Assistent am technisch-physikalischen Institut, Jena. Geleitwort von Prof. W. H. Veil, Direktor der Medizinischen Univ.-Klinik, Jena. Paper. Price, 10 marks. Pp. 174, with 120 illustrations. Jena: Gustav Fischer, 1932.

This monograph is the first one in the world literature on the physical and therapeutic aspects of a hitherto not utilized portion of the electromagnetic spectrum, situated between the hertzian waves and infra-red radiation. The waves of this portion have been named short waves, because they are shorter —about 3 meters in length—than those emitted by a wireless or a high frequency apparatus. The author, who is perhaps the foremost investigator of the biologic effects of short waves, divides his work into six parts. The first four present in minute detail, well illustrated with diagrams, fever charts and photographs, the physics of short waves, their production, method of application and experimental effects on bacteria, animal tissue and human tissue. It is shown that, in contrast to diathermy, maximum heat effect takes place in the depth of the part exposed between the condenser plates of the secondary circuit of the short wave apparatus. The warming of the skin being much less evident, one cannot depend on skin tolerance for a safe technic. It is also admitted that the milliamperemeter gives only an approximate estimate of the strength of the electric field. The possibility of a burn in the depth is thus present. There are differences in the reaction of individuals as well as of tissues, and the most effective wavelength has not been fully determined. The fifth part deals with the results in pathologic conditions in animals, notably experimental infections and tumor transplants. The final and most important part of the monograph carefully attempts to evaluate short wave therapy in superficial suppurative conditions of the human system. Favorable results are shown in furuncles, carbuncles, paronychia, dental infections, empyema of the nasal sinuses and of the chest, monarticular remnants of polyarthritis, osteomyelitis, localized infiltrations of the lungs and early bronchiectasis. Schliephake envisages the possibly of short waves as that of a *therapia sterilisans magna* for destroying localized bacterial invasion in situ. This excellent presentation will serve as a welcome guide for students of this most recent field of physical therapy, which is as yet in its infancy.

Plan and Technique of Developing a Prison into a Socialized Community. By J. L. Moreno, M.D. A Preliminary Report Prepared in Collaboration with E. Stagg Whitin, Ph.D., Chairman, Executive Council. Paper. Pp. 67. New York: National Committee on Prisons and Prison Labor, 1932.

This plan, prepared by a physician who has had opportunities to participate in work with prisoners at Sing Sing, suggests that a careful medical and personality study be made of each prisoner. After this the men are to be grouped in small units, each under the leadership of a selected prisoner. The classification must take into account not only each individual's qualities but the way in which the individuals of each small group will interact with one another. The author gives reasons to believe that the plan is practicable and that a prison thus organized will be easy to administer and will tend to improve its inmates and to eliminate many of the disciplinary and administrative duties that now overburden prison staffs.

J. Schäffers Behandlung der Haut- und Geschlechtskrankheiten. Bearbeitet von Dr. Karl Zieler, o. ö. Professor und Vorstand der Universitätsklinik und Poliklinik für Haut- und Geschlechtskranke in Würzburg, und Dr. Conrad Siebert, bisher leitender Arzt der Abteilung für Haut- und Geschlechtskranke am Krankenhause Berlin-Lankwitz. Eighth edition. Cloth. Price, 13.80 marks. Pp. 487, with 87 illustrations. Berlin: Urban & Schwarzenberg, 1932.

This edition shows evidences of a careful revision by the authors. There are new sections on treatment with grenz rays, on the newer dietetic treatment of lupus vulgaris, and on lymphogranulomatosis inguinalis. The alphabetical arrangement and the emphasis on pharmaceutic therapeusis are valuable features of the work.

Medicolegal

Evasion of Privileged Communication Statute

(Hogan v. Bateman Contracting Company (Ark.), 43 S. W. (2d) 721)

Hogan, 16 years old, was lifting sacks of cement, weighing about 95 pounds each. He was suffering with pains in his side, and according to the evidence, while he was handling a sack of cement something tore loose in his side. He started home but was unable to go and had to be taken in a car. He was put to bed and after suffering a great deal was taken to the hospital. There he was treated by the physician for his employer, the appellee. He continued to suffer pain and after two or three days was taken to another hospital and operated on for hernia. In 1927, Hogan had been examined for a hernia and advised to wear a truss, but he was told he was not ruptured. The present accident occurred June 30, 1930. At the time of the accident Hogan was apparently in a perfectly sound physical condition. While he was in the hospital under the care of his employer's physician, Hogan made a statement. The physician wrote the statement in pencil and had it typed by a notary public, who, in the presence of the physician, read it to Hogan and witnessed his signature.

Hogan sued his employer, basing his right to recover damages on the law limiting the hours of employment of boys and girls under 18 years of age. He claimed that working overtime previous to the date of his injury weakened his condition and that the strain in lifting excessive weights caused the hernia. A judgment was rendered against him. He then appealed to the Supreme Court of Arkansas. Among the errors of the trial court urged in support of his appeal was the admittance in evidence of the statement Hogan had signed, and the testimony of the notary public who prepared it.

The evidence of the attending physician in this case, said the Supreme Court of Arkansas, was clearly inadmissible. The information he received came to him while attending Hogan in a professional capacity, and he could not, over objection, testify as to any such information. As was held by the Supreme Court of Arkansas in *Mutual Life Insurance Company* v. *Owen*, 111 Ark. 554, 164 S. W. 720, the purpose of the statute relating to privileged communications is to cover the relation of physician and patient with the cloak of confidence and thus to allow a greater freedom in their communications to each other in regard to matters touching the disease of the patient. Such statutes are enacted as a matter of public policy, to prevent physicians from disclosing to the world the infirmities of their patients. In the present case, the testimony of the notary public who was called in by the physician to typewrite the statement made by the patient, to read it to the patient, and to witness the patient's signature, was no more competent than the physician. If a physician could call in any third person and disclose to such person his information and thereby enable that person to testify, the statute would be of no effect; the physician could always evade the statute in that way. It has been repeatedly held that other physicians, either partners or physicians called in consultation, present when a statement is made, cannot testify, and a communication made in their presence is privileged under the statute, and it would be an evasion of the statute to admit in evidence information thus obtained.

Notwithstanding the error in admitting in evidence Hogan's statement and the testimony of the notary concerning it, the judgment of the trial court was affirmed because it did not appear that the violation of the statute limiting the hours of employment of children, on which statute Hogan based his suit, was the proximate cause of the injury.

Evidence: Admissibility of Extracts from Medical Books.—Extracts from medical books, says the Supreme Court of Arkansas, are not admissible in evidence, for the very sufficient reason that the author does not write under the sanctity of an oath and has not been subjected to cross-examination. Statements from such books may not be presented as such in the arguments of counsel. They cannot be introduced by means of questions put on cross-examination, as by reading an opposing opinion from a textbook and asking the witness whether it is or is not true; that would have the effect of putting the statement in evidence and thus accomplish by indirection what is expressly forbidden. Counsel may, however, use a medical book to aid him in framing questions to be asked of a physician testifying as an expert, but cannot read from such books to the jury. In cross-examining an expert witness who bases his opinion on a textbook, an attorney may read extracts from the authorities for the purpose of impeaching him.—*Moore v State (Ark.), 43 S. W. (2d) 228.*

Workmen's Compensation Acts: Course of Medical Treatment Not Determinable by Employer.—The Oklahoma workmen's compensation acts, says the Supreme Court of Oklahoma, does not grant to an employer or to his insurance carrier authority to direct the attending physician to amputate an employee's injured foot in order to save the expense that might be incurred in treating it. Even though it is the duty of an employer and of an insurance carrier to provide necessary care and treatment, neither of them has authority to determine the treatment that the physician is to administer or to interfere in any way with the judgment of the physician as to the proper course of treatment.—*Blackstock v. Airington (Okla.), 5 P. (2d) 381.*

Wills: Opinion as to Testamentary Capacity.—In an action to contest a will, a physician who attended the testatrix may testify to such facts as tend to shed light on her mental condition and may give his opinion concerning it. He should not be allowed to give an opinion as to the mental capacity of the testatrix to make the will in question. Such an opinion presupposes knowledge on the part of the physician concerning the degree of capacity the law requires in order that a will may be valid. It involves, too, the physician's opinion, not only as to the fact of the capacity of the testatrix but also as to the legal consequences of the facts which he has observed or as to which he has an opinion. The testimony of an expert witness, as well as of all other witnesses, cannot be received if it amounts to a conclusion of law.—*Fields v. Luck (Mo.), 44 S. W. (2d) 18.*

Evidence: Testimony of Lay Witness as to Absence of Syphilis Not Admissible.—While it may be conceded, says the Supreme Court of Alabama, though this is not decided, that a wife who has lived with her husband in conjugal relations for twenty-seven years continuously may be qualified to testify that on a specific date he was not affected with an acute venereal disease, we are not prepared to hold that she is competent to state as a fact or express an opinion that the husband did not have syphilis. The authorities establish a contrary rule.—*Mutual Life Ins. Co. of New York v. Mankin (Ala.), 138 So. 265.*

Society Proceedings

COMING MEETINGS

American Acade [illegible] ind Otolaryngology, Montreal, Sept. 19-23. [illegible] 1500 Medical Arts Building, Omaha, Neb., [illegible]

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, French Lick, Indiana, Sept. 12-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American Congress of Physical Therapy, New York, Sept. 6-10. Dr. F. B. Balmer, 185 North Wabash Avenue, Chicago, Secretary.

American Hospital Association, Detroit, Sept. 12-16. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

Colorado State Medical Society, Estes Park, Sept. 8-10. Mr. Harvey T. Sethman, 227 16th Street, Denver, Executive Secretary.

Idaho State Medical Association, Pocatello, Sept. 16-17. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Michigan State Medical Society, Kalamazoo, Sept. 13-15. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Oregon State Medical Society, Klamath Falls, Sept. 22-24. Dr. Albert W. Holman, 410 Taylor Street, Portland, Secretary.

Utah State Medical Association, Ogden, Sept. 15-17. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.

Washington State Medical Association, Tacoma, Sept. 12-14. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal Medical Sciences, Philadelphia

183: 593-740 (May) 1932

Peroral and Intravenous Cholecystography: Comparison of Relative Merits and Results in One Hundred Cases. L. H. Hitzrot and E. P. Pendergrass, Philadelphia.—p. 593.
*Pathogenesis of Perigastric Abscess Complicating *Peptic Ulcer.* *H. A.* Singer and P. A. Rosi, Chicago.—p. 600.
Insulin and Appetite: I. Method for Increasing Weight in Thin Patients. L. H. Nahum and H. E. Himwich, New Haven, Conn.—p. 608.
Metabolic Changes and Treatment of Obesity. M. G. Wohl, Philadelphia.—p. 613.
*Craig Complement-Fixation Test for Amebiasis in Chronic Ulcerative Colitis. E. D. Kiefer, Boston.—p. 624.
*Study of Capillary Pressure in Nephritis and Hypertension. I. Mufson, New York.—p. 632.
*Practical Application of Blood Sedimentation Test in General Medicine: Observations Based on Approximately Five Thousand Patients Over a Period of Six Years. J. W. Cutler, Philadelphia.—p. 643.
Pathologic Changes Occurring in Polymorphonuclear Leukocytes During Progress of Infections. M. A. Kugel and N. Rosenthal, New York.—p. 657.
Trichiniasis: Discussion, with Reference to Eleven Recovered Cases in a Family. E. C. Reifenstein, E. G. Allen, Syracuse, N. Y., and G. S. Allen, Clyde, N. Y.—p. 668.
Primary Angiofibroma of Diaphragm. E. Burvill-Holmes and W. Brody, Philadelphia.—p. 679.
Facial Diplegia in Polyneuronitis. G. Wilson and H. F. Robertson, Philadelphia.—p. 680.
Cerebellar Apoplexy. J. C. Michael, Minneapolis.—p. 687.
Spontaneous Bilateral Pneumothorax: Report of Case and Review of Literature. B. T. McMahon, Loomis, N. Y.—p. 695.
Respiratory Measurements as Affected by Smoking and Athletics. F. C. Turley and T. R. Harrison, Nashville, Tenn.—p. 702.

Perigastric Abscess Complicating Peptic Ulcer.—In thirty cases of perigastric (including subphrenic) abscess of ulcer origin, Singer and Rosi obtained convincing evidence of a previous acute perforation into the free abdominal cavity in twenty-nine. They believe that the formation of adhesions which are found about a perigastric abscess generally follows rather than precedes perforation. Between the time of recovery from the acute symptoms of perforation and the time of onset of manifestations of a perigastric abscess, a period of fair health frequently intervenes. It is on this account that a patient often fails to associate the two illnesses. Unless a previous acute perforation is suspected and a minute-by-minute history of the initial symptoms obtained, the antecedent occurrence of a sudden, violent abdominal pain is often not elicited. In most instances a perigastric abscess of ulcer origin represents a neglected opportunity on the part of the patient, but perhaps more frequently on the part of the physician. Early recognition of perforated peptic ulcer, especially the type with mild postoperative symptoms (abortive form), together with timely operation, will eliminate the greater number of perigastric abscesses.

Craig Test for Amebiasis in Chronic Ulcerative Colitis.—Kiefer points out that it is extremely difficult to differentiate between chronic ulcerative colitis and chronic amebic colitis. The result of the Craig complement-fixation test for infection with Endamoeba histolytica when applied to patients with chronic ulcerative colitis is reported showing that fifteen out of nineteen cases gave a strongly positive reaction. No conclusions as to the significance of this observation are drawn, but it is suggested that chronic ulcerative colitis may be a pyogenic infection of the colon superimposed on an original amebic ulceration.

Capillary Pressure.—A comparison is made by Mufson between the capillary morphology found in essential hypertension and peripheral arteriolar spastic (Raynaud's) disease. From their marked difference it seems more probable that essential hypertension is due not solely to arteriolar spasm but to a generalized arterial spasm. The frequent association of high capillary blood pressure with renal disease is indicative of a spasm response due to a severe involvement of the systemic capillary system. A relationship between the capillary pressure and osmotic pressure of the blood to the presence of edema was found to exist in nephritis.

Blood Sedimentation Test in General Medicine.—Cutler studied the blood sedimentation test in hospital, office and dispensary practice during the past six years with more than 5,000 patients. The test was found to be of distinct diagnostic and prognostic value in diseases characterized by disturbed stability of the blood. In diagnosis the test has two values, first as a diagnostic lead and second as a diagnostic gage. As a diagnostic lead it indicates the presence of serious disease, not infrequently before the disease can be recognized by the usual clinical and laboratory methods. As a gage of the constitutional disturbance produced by the pathologic process, it indicates the intensity of the disease and thus, like fever or pulse rate or blood count, but more exactly, helps to complete the diagnosis in a qualitative sense. As a prognostic index and, similarly, as a guide in treatment, the rate of sedimentation has been shown to be a more accurate and reliable reflection of the real condition of the patient than the usually accepted procedures. It invariably becomes more rapid as the disease progresses, and approaches stability only as the physical condition returns to normal. It is not influenced by psychologic factors and may be the only warning of disaster among promising clinical signs, such as gain in weight and the absence or subsidence of symptoms. In this way it is often the only, or the most accurate, evidence of favorable, or of unfavorable, response to treatment. The test is simple to perform and to interpret and is inexpensive. It is a clinical procedure and can be carried out in the office, in the dispensary or at the bedside. The complete result is available within an hour, and in case of necessity the sedimentation test will give valuable information within the first half hour. Its greatest field of usefulness should be in office and dispensary practice, especially in the latter, where large numbers of patients must often be seen in short periods of time and by men seeking experience. Properly interpreted and used with an open mind, the test should in time become one of the most widely used tests in clinical medicine. Its practical value in any given disease is best studied as a separate problem, and such studies should be undertaken in large numbers so that sufficient data become available in a short period of time. Only in this way will lingering doubts be removed and the sedimentation test firmly established as a valuable addition to the equipment of the physician.

American Journal of Ophthalmology, St. Louis

15: 397-492 (May) 1932

Ophthalmia Aegyptiaca. R. P. Wilson, Cairo, Egypt.—p. 397.
*Theoretical and Practical Study of Intracapsular Cataract Extraction. R. Castroviejo, New York.—p. 406.
*Adenocarcinoma of Lacrimal Gland: Case Report. R. H. Freyberg, Ann Arbor, Mich.—p. 417.
Chemical Constitution of Cornea. A. C. Krause, Baltimore.—p. 422.
Glioma Exophytum. R. M. Cutino and R. Lloyd, Brooklyn.—p. 425.
Hyaloid Membrane of Vitreous. A. Cowan and W. E. Fry, Philadelphia.—p. 428.

Intracapsular Cataract Extraction.—Castroviejo presents a critical study of the four methods of cataract extraction most employed, namely, the classic extracapsular method and the three intracapsular methods, Smith Indian, forceps and suction. The advantages and disadvantages are set forth on theoretical grounds and on the basis of results reported by the leading exponents of each method and of the author's experience. Theoretically and practically, the operation of Smith is inferior to the operations of Elschnig (forceps) and Barraquer (suction), owing to its greater number of complications, especially loss of vitreous, deviation of the pupil upward, and incarceration of the iris. The forceps method as it is performed by Elschnig is a rational operation, which unites the advantages of the Smith and the forceps methods, without their inconveniences, and requires only a simple instrumental equipment; it has no other inconveniences except that it gives a number of ruptured capsules, which varies between 20 and 30 per cent. The Barraquer method is theoretically and practically the best and most perfect of the intracapsular operations, because it gives as good visual results as the combined method of Elschnig and has no more complications. It has, on the contrary, the advantage that it rarely ruptures capsules. The only drawback to the method is the cost of the instrument. The development of intracapsular operations and their actual use without exposing patients to serious complications has been due to the systematic application of all the complementary details to assure a perfect immobility of the patient, to facilitate the surgical moment, and to effect a convalescence without accidents. As the intracapsular methods are not applicable to juvenile and traumatic cataracts, with posterior synechia and other complications, the classic method is necessary in these cases.

Adenocarcinoma of Lacrimal Gland.—Freyberg reports a case in which a recurrent neoplasm of the right orbit was known to have been present twenty-five years, in the course of which time an enucleation of the displaced eyeball and two exenterations of the right orbit were performed, nine, sixteen and twenty-five years, respectively, after the tumor was first noticed. The character of all the neoplastic tissue available for microscopic study, extending over a period of nine years, is that of a pure adenocarcinoma. From an analysis of the literature concerning tumors of the lacrimal gland, and the protracted history of this case, the author suggests that this adenocarcinoma may have originated in a mixed tumor of the salivary gland type, by the epithelial elements overgrowing the supporting tissue components.

American Journal of Physical Therapy, Chicago

9: 29-56 (May) 1932

A Doctor Looks at Shoes. N. D. Mattison, New York.—p. 33.
Physiotherapy and Electrotherapy Demonstrations. P. V. Montville.—p. 39.
Uvula and Posterior Pillar Protection in Suction Tonsillectomy. J. B. H. Waring, Cincinnati.—p. 42.
Clinical Study of the Reaction of Skin to Ultraviolet Light. H. Goodman, New York, and H. S. Abel, Providence, R. I.—p. 44.

American Journal of Public Health, New York

22: 455-578 (May) 1932

Intermittency in Growth as an Index of Health Status. C. E. Turner, Ellen Lytle and Charlotte Winnemore, Columbus, Ohio.—p. 455.
Meaning of "Antiseptic," "Disinfectant" and Related Words. A. M. Patterson, Yellow Springs, Ohio.—p. 465.
A Health Aspect of Frozen Vegetables. R. P. Straka and L. H. James, Washington, D. C.—p. 473.
Identification of Certain Funguses Pathogenic for Man. W. D. Stovall and Anna Bubolz, Madison, Wis.—p. 493.
Monilias, Yeasts and Cryptococci: Their Pathogenicity, Classification and Identification. Rhoda W. Benham, New York.—p. 502.
What Constitutes Health Education in High School? I. Galdston, New York.—p. 505.
Judging Efficiency of Enforcement of Sanitary Milk Regulations. J. D. Brew, Albany, N. Y.—p. 514.
Modified Cellobiose Broth for Differentiation of B. Coli and B. Aerogenes. J. E. Dowd, New York.—p. 537.
Preparation of Medium for the Culture of Bacterium Tularense. R. E. Daniels, Columbus, Ohio.—p. 539.

American Journal of Surgery, New York

16: 199-400 (May) 1932

*Lesions in and Adjacent to Sella Turcica. C. H. Frazier, Philadelphia.—p. 199.
*Modification of the Devine Operation of Pyloric Exclusion for Duodenal Ulcer. F. W. Bancroft, New York.—p. 223.
*Tumors of Cecum: Discussion and Report of Seventy Cases. J. F. Erdmann, New York.—p. 231.
Fascial Transplants for Closure of Orifice of Umbilical Hernia. G. P. LaRoque, Richmond, Va.—p. 239.
*Impracticability of Using Fascia for Gradual Occlusion of Large Arteries. H. E. Pearse, Jr., Rochester, N. Y.—p. 242.
Thoracoplastic Surgery in Chronic Tuberculosis with Associated Empyema. W. H. Thearle, Los Angeles.—p. 247.
Nonparasitic Cysts of Spleen: Report of Patient Successfully Operated on. B. T. Tilton, New York.—p. 250.
*General Principles in Diagnosis of Injuries of Lower Back and Pelvis. J. M. Troutt, Hot Springs National Park, Ark.—p. 253.
Implantation of Fascia in Round Ligaments for Retrodisplacements of Uterus. A. P. Vastola, Waterbury, Conn.—p. 267.
Neurosurgery in Diseases of Urinary Bladder. J. R. Learmonth, Rochester, Minn.—p. 270.
Vesical Diverticulum in Female. L. P. Wershub, New York.—p. 275.
So-Called Essential Hematurias: Are They Chiefly Due to Ureteral Stricture? G. L. Hunner, Baltimore.—p. 279.
Gunshot Wounds of Urinary Bladder: Report of Two Cases. H. J. Shelley, New York.—p. 301.
*Can Benign Thyroid Tumors Metastasize? Review of Literature with Illustrative Case Report. M. Thorek and P. Thorek, Chicago.—p. 304.
Prolapse of Rectum: Contribution on Etiology and Treatment. S. D. Weinstein, Brooklyn.—p. 310.
Intestinal Obstruction. S. J. Waterworth, Clearfield, Pa.—p. 317.
Appendicitis in Children. J. J. Kirschenmann, Brooklyn.—p. 318.
*Stricture of Rectum, with Especial Reference to Stricture in the Colored Race: Report of One Hundred and Sixty Cases. H. T. Hayes, Houston, Texas.—p. 323.

Lesions of Sella Turcica.—Frazier states that, in the early days of the surgery of pituitary lesions, surgeons were wont to think mostly of the intrasellar adenoma, representing as it does unquestionably the most frequent of all lesions in this territory. As time progressed, their attention was drawn to many other tumors, which, because of their juxtaposition to the sella turcica, gave rise to endocrine symptoms of pituitary origin and to structural changes in the bony processes of the pituitary fossa. The author believes that the most satisfactory classification of the lesions under consideration is based on the pathologic histology of the lesion in question. On this basis he includes in his discussion of the differential diagnosis, supported by illustrative cases, (1) intrasellar adenoma, (2) suprasellar adenoma, (3) adenocarcinoma, (4) malignant adenoma, (5) adamantinoma, (6) teratoma, (7) ganglioneuroma, (8) suprasellar arachnitis (pseudotumor), and (9) suprasellar fibroblastoma.

Pyloric Exclusion.—Bancroft reports that Cole's modification of the Devine operation in a small series of cases has proved to have a low enough mortality and satisfactory enough end-results to warrant its use in postpyloric ulcers in which the ulcers are adherent to the pancreas or in the neighborhood of the papilla of Vater. Its use is advocated in patients who have been refractory to medical care and in those in whom there is no marked gastric retention.

Cecal Tumors.—According to Erdmann, carcinoma is the most frequent cecal tumor requiring surgical intervention. Lymphosarcoma is the most highly malignant tumor. Cecal carcinomas are slow growing and only moderately malignant. Secondary infection invades the tumor early and is the chief cause of the profound cachexia found in these cases. Distant metastases are rare in carcinoma of the cecum. Secondary intestinal growths are not uncommon and should always be sought for. A malignant tumor obstruction may simulate a chronic appendicitis.

Occlusion of Arteries.—Pearse attempted a method of partial occlusion of arteries with six to eight turns of heavy fascia. This amount of connective tissue was used in the hope of inducing enough scar tissue contracture to complete the obstruction. The method was used on the thoracic aorta of dogs in ten experiments and the abdominal portion below the renal vessels in six instances. With a plastic substance, such as tissue strips, it is difficult to judge the degree of constriction. Because of this, three animals were killed by too great obstruction of the thoracic aorta. In four instances the arterial wall atrophied and ruptured at the site of the constricting device. Rupture occurred in from seven to seventeen days after operation. In the remaining nine experiments, relaxation of the fascia invariably occurred. Restitution of the caliber of the lumen was partial in one month and complete in from two to three months. Resorption of the tissue bands occurred in from three to four months. The results of these experiments permit the conclusion that fascia is an unreliable and somewhat dangerous material to use for partial occlusion of the great vessels.

Injuries of Back and Pelvis.—Troutt emphasizes the fact that injury of the lower part of the back has great potentiality for disability. It is most important to correlate the history, symptoms, and laboratory observations in arriving at a diagnosis. It must be realized that the disability ascribed to sacro-iliac and lumbosacral derangement of any, except extreme degree, has little beyond subjective symptoms to support the diagnosis.

Thyroid Tumors.—The Thoreks call attention to the fact that the power of metastasizing at a distance has generally been considered to be characteristic of primary malignant tumors. Nevertheless, certain primary benign connective tissue tumors, such as lipomas, myxomas and chondromas, as well as myeloid tumors, are capable of becoming generalized. Benign epithelial tumors rarely generalize, although when one considers the matter there does not appear to be any sufficiently adequate reason why they should not do so. The authors report an instance of benign metastasizing adenoma of the thyroid with metastases in the neck and both lungs.

Rectal Stricture.—From the study of 160 cases of rectal stricture, Hayes concludes that this condition is nearly always inflammatory; that gonorrhea, in the Negro race at least, is the chief etiologic factor; and that the strictures occur much more frequently in Negro women than in any other race or sex. He believes that the scar-forming tendency of the Negro race is the real basis of the stricture formation in this race. There is only a slight tendency to stricture formation in the white and Mexican races. Syphilis seems to play an unimportant part in the formation of stricture of the rectum. As yet, treatment is unsatisfactory and the author feels that excision should be resorted to in the badly infected cases more often than it is at present.

Archives of Ophthalmology, Chicago

7: 661-830 (May) 1932

Electro-Endothermy in Detachment of Retina. S. Larsson, Stockholm, Sweden.—p. 661.

The Foundation of the New York Eye and Ear Infirmary. B. Samuels, New York.—p. 681.

*Myasthenia Gravis: New Diagnostic Eye Observations, with Possible Pathologic Significance. S. V. Abraham, Los Angeles.—p. 700.

Size and Shape of Ocular Images: II. Clinical Significance. E. H. Carleton and L. F. Madigan, Hanover, N. H.—p. 720.

Hyperphoria: Diagnosis and Treatment. J. W. White, New York.—p. 739.

*Extensive Iridodialysis: Operation, Reattachment: Report of Two Cases. B. W. Key, New York.—p. 748.

*Isolated Foci of Calcification in Sclera: Anatomic and Clinical Aspects. Bertha Klien-Moncreiff, Chicago.—p. 757.

Determination of Oxidation-Reduction Mechanism in Lens of Rabbits with Naphthalene Cataract. H. Gifford, Jr., Omaha.—p. 763.

Ophthalmology in Ukraine. E. Rabkin, Kharkow, Ukraine.—p. 769.

Chemical Burns of Eye. L. F. McAndrews, Philadelphia.—p. 779.

Myasthenia Gravis.—Abraham believes that in myasthenia gravis the irregularity in the amount and quality of the heterophoria in the short span of a few moments, the irregularity in duction readings, the unusually high duction readings, the close proximity of the images when diplopia is produced, the approximation of the amount of prism used in creating the diplopia, and the hyperphoria as measured by the Maddox rod test and the actual turning of the eye in the direction of the apex of the prism, indicating that the muscle stimulated does not "tire," permit of but one interpretation; namely, that the muscle or muscles stimulated contracted, but failed to relax promptly or completely, remaining in a prolonged contraction state. Such observations obtain in no other condition in which tests have been performed and therefore would seem of diagnostic value in this condition. From these observations the author is led to conclude that myasthenia gravis is not a true myasthenia.

Iridodialysis.—According to Key, the correction of iridodialysis by operative procedure offers an interesting problem in the analysis of the forces affecting incarceration of the iris for this purpose. He reports a case that demonstrates the degree of correction that may be secured by this simple operative technic: a pupil perfectly round and equal in size to that of the fellow eye, an active sphincter iridis, the base of the iris apparently reattached, the level of the iris almost normally maintained—in fact, no deformity and the visual efficiency restored. Another case demonstrates the result of fibrous contraction in the substance of the iris or of excessive incarceration of the iris following filtration of aqueous, which occurred after removal of the suture on the fourth day. Prior to this, the correction of the defect was in every respect as satisfactory as that in the first case. The pupil is displaced, but the deformity is improved and the vision may be restored following discission of the secondary membrane. While it is quite obvious that this simple operative procedure requires some delicacy in technic, which must be emphasized, it is neither difficult nor uncertain in its performance. The hazard of operation is in direct proportion to the extent and location of the defect and should be measured in terms of the deformity and the probable improvement in the visual efficiency.

Calcification in Sclera.—Klien-Moncreiff reports that in two histologically studied eyes from very old persons, one removed because of recurrent uveitis and secondary glaucoma, the other because of endophthalmitis and beginning atrophia bulbi, there were localized, well defined foci of calcareous degeneration within portions of the sclera completely devoid of nuclei, indicative of a primary necrosis of the sclera. The identical location of these calcified areas anterior to the tendinous insertions of the lateral recti in these cases and also in other cases previously reported by other writers indicates that, in addition to chronic disease or old age, mechanical factors may well be predisposing causes for this localization of the calcified lesions. The discovery of hard, resistant and apparently calcified scleral tissue adjoining the limbus in three surgical cases outlined shows that this condition is not without some clinical importance.

Canadian Medical Association Journal, Montreal

26: 519-648 (May) 1932

*Renal Insufficiency in Essential Hypertension. L. G. Bell, Winnipeg, Manit.—p. 525.

*Surgical and Clinical Study of Nine Cases of Chronic Subdural Hematoma. K. G. McKenzie, Toronto.—p. 534.

Yeast Infection in Man: Report of Case. R. S. Saddington, Toronto.—p. 544.

Lead Poisoning in Children. H. S. Mitchell, Montreal.—p. 546.

Regeneration of Distal Phalanx. L. H. McKim, Montreal.—p. 549.

*Influence of Infection on Reaction of the Diabetic to Insulin Treatment: Report of Unusual Case. I. M. Rabinowitch, Montreal.—p. 551.

Cavity Formation in Its Relation to Prognosis and Treatment in Pulmonary Tuberculosis. T. G. Heaton, Toronto.—p. 554.

Treatment of Ureteral Calculi, with Analysis of Two Hundred Cases. E. C. Smith, Edmonton, Alta.—p. 560.

Significance of Infection in Cardiovascular Disease. E. P. Scarlett, Calgary, Alta.—p. 562.

Diphtheria and Acute Toxin Encephalitis: Report of Case. W. E. B. Hall, Philadelphia.—p. 566.

Fifteen Years' Experience with Radium. E. S. Hicks, Brantford, Ont.—p. 569.

Types of Diseases Treated During Five Year Period at Brandon Mental Hospitals. S. Schultz, Brandon, Manit.—p. 572.

"Avertin" Ethylene Anesthesia. W. B. Neff, Montreal.—p. 576.

Renal Insufficiency in Essential Hypertension.—Bell calls attention to the fact that, in a small percentage of cases of essential hypertension, renal insufficiency ensues and death occurs in uremia. These cases may take the form of a gradual obliteration of the renal parenchyma because of arteriolosclerosis, or they may exhibit a rapid course as the result of necrosis of the afferent arterioles. The essential difference between benign and malignant nephrosclerosis is probably one of time. Malignant nephrosclerosis may be regarded as an acute arteriolosclerosis. Some cases show grades of severity intermediate between the benign and the malignant forms.

Subdural Hematoma.—McKenzie believes that patients with subdural hematoma should be operated on by removal of the contents of the hematoma by suction through a small bone opening. The exception to this rule is when a case is encountered in which there is a solid clot. The cavity should be filled with physiologic solution of sodium chloride and drainage established with a good-sized tube. This allows the saline solution to escape and permits complete expansion of the brain and obliteration of the cavity. The use of a large osteoplastic flap is usually unnecessary and may be dangerous, especially if the case should prove to present a bilateral hematoma. It is not necessary to remove the outer or inner membrane of the hematoma. The localizing signs are often confusing or entirely absent, so that a ventriculogram or one or more exploratory burr holes is frequently necessary.

Infection and Insulin.—Rabinowitch reports a case in which a man, aged 64, with a history of diabetes of three years' duration and with the disease complicated by cardiovascular-renal disease and prostatic enlargement with cystitis and pyuria, was admitted to the hospital in a state of a precoma. Following the usual treatment of this condition, he was given a high-carbohydrate low-fat diet, and about three weeks after admission was exposed to a cystotomy and eleven days later to enucleation of the prostate. In spite of the advanced stage of the diabetes on admission and exposure to the injury associated with these two operations, including ether anesthesia, it was possible to discontinue the use of insulin entirely before the patient left the hospital, though the carbohydrate content of the diet was over 200 Gm. While improvement of carbohydrate tolerance is not an uncommon phenomenon following recovery from conditions that tend to lower tolerance, it has usually been noted in relatively mild diabetes. In the author's experience, this is the first case associated with the disease when the condition has reached the stage of coma. Of additional interest is the fact that the patient was treated with the high-carbohydrate low-fat diet.

Endocrinology, Los Angeles

16: 225-336 (May-June) 1932

- *Recent Advances in Physiology of Reproduction in Relation to Zondek-Aschheim Test for Early Detection of Pregnancy. B. Parvey, Boston. —p. 225.
- *Functional Relations of Hypophysis and Brain. W. J. Atwell, Buffalo. —p. 242.
- *Renal Function in Exophthalmic Goiter and Myxedema. J. Lerman and A. J. Brogan, Boston.—p. 251.
- Technic for Hypophysectomy of Rat. K. W. Thompson, Boston.—p. 257.
- *Thyroid Hormone in Blood and Urine in Graves' Disease: Preliminary Paper. L. R. Himmelberger, Flint, Mich.—p. 264.
- Studies on Extraction of Testicular Hormone from Tissues and on Its Quantitative Distribution Therein. E. B. Womack and F. C. Koch, Chicago.—p. 267.
- Testicular Hormone Content of Human Urine. E. B. Womack and F. C. Koch, Chicago.—p. 273.
- Ovariectomy and Corpus Luteum Extract Studies on Rats and Ground Squirrels. G. E. Johnson and Joanna Seiler Challans, Manhattan, Kan.—p. 278.
- Addison's Disease Successfully Treated with Cortin and Adrenal Cortex Extract: Case. J. Horák, Brno, Czechoslovakia.—p. 285.
- *Posterior Pituitary Therapy in Diabetes Insipidus. B. Vidgoff, Portland, Ore.—p. 289.
- *Epileptoid Attacks and Hyperinsulinism: Report of Case. B. E. McGovern, New York.—p. 293.

Zondek-Aschheim Pregnancy Test.—On the basis of a review of the recent advances in the physiology of menstruation and pregnancy, Parvey draws the following conclusions: 1. Folliculin is an important factor in the building up of the basal layer of the uterine endometrium in the first stage of menstruation. The presence of the corpus luteal hormone is responsible for further development of this endometrium, and, as a result, a diminution of the same hormone, desquamation and extravasation of the endometrium occur. 2. The persistence of the action of the corpus luteal hormone results in the development of the endometrium into the decidua and in the first months is indispensable to pregnancy. The termination of parturition is probably brought about by a diminution or disappearance of the corpus luteal hormone. An increase of this hormone in the late months results in prolongation of pregnancy. 3. The hormone of the anterior pituitary body is increased in the blood and urine in pregnancy and acts as a stimulus for the production of the corpus luteum. The excretion of this pituitary hormone in the urine, and for this reason the capacity of such urine when injected into rodents to produce characteristic changes in the ovaries, has led to a simple and reliable test for pregnancy. The author reviews the historical development of contributions relating to recent advances in the physiology of reproduction and presents the basis of the Zondek-Aschheim test for the early diagnosis of pregnancy. He applied the test with excellent results in 370 cases and these are tabulated. A brief outline of technic is given.

Hypophysis and Brain.—Atwell presents a critical review of current views concerning the functional relationships of the pituitary and the brain. He holds that adequate proof of many of these views is lacking and that there has been a confusion of propinquity with functional association. Experiments on amphibia indicate that contact of brain and pituitary fundament is necessary for the early development and differentiation of the pars intermedia but not for the later functioning of this lobe. The adiposity of Fröhlich's syndrome is probably due to suprasellar disturbances involving the hypothalamus or the pars tuberalis, or both; genital infantilism is apparently due to lack of one of the hormones of the anterior lobe. The author considers evidence indicating the possible participation of the pars tuberalis in the production of diabetes insipidus.

Renal Function in Exophthalmic Goiter and Myxedema.—In a study of the phenolsulphonphthalein excretion of seventy-five patients with exophthalmic goiter and twenty-two patients with myxedema, Lerman and Brogan found that renal function in the former varies with age; i. e., up to the age of 50 the function is more or less constant, but after 50 it diminishes rapidly. The renal function of myxedema patients is slightly but consistently lower than that of exophthalmic goiter patients in all age groups except in the group 60 years and over. The function in both diseases is probably within normal limits. The slight differences are adequately accounted for by the antithetical circulatory conditions. There is no relationship between the degree of phenolsulphonphthalein excretion in exophthalmic goiter and myxedema and the basal metabolic rate or the degree of anemia. There is a slight relationship between phenolsulphonphthalein excretion and pulse pressure in myxedema only. The data presented offer no support to the concept that permeability of renal tissue is significantly altered in hyperthyroidism or myxedema.

Exophthalmic Goiter.—Himmelberger reports that when the blood serum or urine from patients with exophthalmic goiter is injected into mice a substance capable of disturbing liver function can be demonstrated. In the limited number of cases studied, the presence of the hormone paralleled the presence of lymphoid tissue in the resected thyroids, thus lending further support to the view that lymphoid areas are an essential part of the pathologic picture in exophthalmic goiter. It is suggested that the demonstration of this hormone in urine or blood serum might be useful as an aid in differential diagnosis and also prove to be of value in the experimental study of exophthalmic goiter.

Diabetes Insipidus.—Vidgoff states that prolonged study in a single subject indicates that desiccated posterior pituitary in powder form applied to the nasal mucosa gives satisfactory relief from the symptoms of diabetes insipidus. The urinary secretion, qualitatively and quantitatively, returns to normal figures. The nasal mucosa is not damaged by the local application of powdered pituitary substance in sufficient quantity to afford complete relief from the symptoms of the disease. The quantity of pituitary substance necessary to afford complete relief is less, in powder form, than the amount required by hypodermic injection of an extract or nasal application of an extract in jelly base.

Epileptoid Attacks and Hyperinsulinism.—A patient exhibiting symptoms of hyperinsulinism was closely observed by McGovern over a period of several years. The chief indications of the disorder were frequent attacks of amnesia and coma, which occurred usually in the forenoon and were often accompanied by convulsions, and during which the blood sugar content fell to 30 mg. per hundred cubic centimeters. Treatment such as phenobarbital, bromides and other sedatives, as well as the Peterman ketogenic diet, failed to prevent the attacks, for which reason epilepsy was excluded as the etiologic factor. Solution of pituitary promptly restored consciousness during the individual attacks, but for this purpose epinephrine plus dextrose given intravenously gave best results. Carbohydrate given every hour during the forenoon has kept the patient free from attacks for about a year and a half.

Illinois Medical Journal, Chicago

61: 361-452 (May) 1932

- Medical Societies Can Operate Their Own Special Clinics. C. P. Blair, Monmouth.—p. 412
- *Surgical Limitations in Gastric Syphilis. G. de Tarnowsky, Chicago. —p. 414.
- Proctology: Clinical Summary of Four Thousand and Sixteen Proctoscopic Examinations. M. H. Streicher, Chicago.—p. 418.
- *Chronic Nontuberculous Diseases of Lung, with Report of Case of Fungous Infection of Lung, Probably the Sporotrichum Schenckii. A. Egdahl, Rockford.—p. 422.
- The Doctor Looks at Business. J. D. Ellis, Chicago.—p. 426.
- Large Spontaneous Abscess of Liver with Rupture Into Pericardium. A. J. Azar, Elgin.—p. 428.
- *Hay Fever in North Central States: Its Cause and Treatment. S. M. Feinberg, Chicago.—p. 429.
- Whooping Cough: Laboratory Diagnosis. L. W. Sauer, Evanston.—p. 433.
- *Silent Endocarditis. D. C. Sutton, Chicago.—p. 438.
- Acute Spinal Cord Degeneration: Case Report. W. A. Frymire, Monmouth.—p. 439.
- Practical Use of Thymophysin in Obstetrics. E. Jonas, Chicago.—p. 443.
- Combined Trypaflavine Quartz Light Treatment of Psoriasis Vulgaris: Report of One Hundred and Eleven Cases Thus Treated. S. J. Zakon, Chicago.—p. 444.
- Agranulocytic Angina. H. V. Gould, Chicago.—p. 447.

Surgical Limitations in Gastric Syphilis.—De Tarnowsky reports three cases of gastric syphilis. He believes that, with routine Wassermann-Kahn tests and proper roentgenographic interpretation, the diagnosis of this condition should not be difficult. A marked disproportion between the extent of the pathologic picture, as interpreted by the roentgenogram, and lack of cachexia with loss of weight, are almost pathognomonic.

Antisyphilitic treatment should be given a trial in all cases and persisted in as long as clinical improvement is manifest. Pyloric obstruction constitutes the sole indication for operative intervention; posterior gastro-enterostomy and, exceptionally, pyloroplasty are the only justifiable procedures.

Chronic Nontuberculous Diseases of Lung.—Egdahl believes that infection of the lungs with the different types of fungi is more common than generally supposed. Infection of the lung with the specific type of fungus, Sporotrichum schenckii, is extremely rare. The pathologic changes in the lung produced by all these different types of filamentous fungi are of the nature of granulomatous changes. The pathologic changes are not characteristic of any particular type of fungus. To make a definite diagnosis of the infective agent in these cases, it is necessary to study the microscopic and cultural characteristics of the fungus, and at times also the action on animals. In a case of pulmonary disease of undetermined etiology, and after repeated search for tubercle bacilli in the sputum, one should examine for the presence of a fungus. If found it may solve the diagnosis, and the patient may benefit by appropriate treatment.

Hay Fever.—Feinberg emphasizes the fact that for the study and successful management of any case of hay fever one must have first hand knowledge of the hay fever plants in his district. Complete pollen tests are necessary for conscientious work. The routine use of skin tests for substances other than pollen will augment the results and minimize the failures. The preferable method of treatment is the long preseasonal scheme, although the short interval method and the coseasonal method may also bring good results. The perennial method of treatment in patients who have already been treated for one season offers additional advantages. Systemic reactions may be minimized by certain precautions. The maximal results may be obtained by the use of correct and potent pollen, properly preserved and administered according to individual indications, and by attention to complicating sensitizations.

Silent Endocarditis.—Sutton describes a case in which a mitral valve lesion developed entirely without symptoms except a tachycardia. He calls attention to the fact that an endocarditis may involve a new valve in the presence of a chronic valvular disease, without giving any external evidence. With a preceding chronic valvulitis of the mitral valve, new involvement of the aortic valve has been observed a number of times, and of the tricuspid valve twice. Attention is also called to the importance of fatigue as the first evidence of, and preceding by a long interval, definite evidences of bacterial endocarditis.

Indiana State Medical Assn. Journal, Fort Wayne

25: 205-244 (May) 1932

Dietary of Childhood Tuberculosis: Cereal as a Source of Added Mineral and Vitamin Elements: Preliminary Report. P. D. Crimm, Evansville.—p. 205.

Fewer and Better Babies (from Viewpoint of Eugenic Sterilization). C. O. McCormick, Indianapolis.—p. 206.

Cardiorenal Syndrome: Discussion of Arteriosclerosis, Hypertension and Chronic Nephritis. C. E. Briscoe, New Albany.—p. 214.

Cerebrospinal Rhinorrhea: Report of an Unusual Case. H. C. Wurster, Mishawaka.—p. 218.

Partial Abruptio Placentae: Case Report. F. T. Younker, Bremen.—p. 221.

Traumatic Injury to Kidney: Report of Two Similar Cases Due to Violence Sustained in Football. P. A. Campbell, Culver.—p. 221.

Johns Hopkins Hospital Bulletin, Baltimore

50: 305-356 (May) 1932

*Calcium and Phosphorus Studies: IV. Relation of Calcium and Phosphorus of Diet to Toxicity of Viosterol. D. H. Shelling and Dorothy E. Asher, Baltimore.—p. 318.

Id.: V. Comparative Effectiveness of Viosterol and Cod Liver Oil in Protecting Body Against Calcium Deficiency in Diet. D. H. Shelling and Dorothy E. Asher, Baltimore.—p. 344.

Calcium and Phosphorus Studies.—Shelling and Asher describe experiments in which they demonstrated that the calcium and phosphorus content of the diet is a determining factor in viosterol toxicity in rats. Optimal calcium-high phosphorus diets are the most predisposing to the injurious effects of viosterol; and high calcium-low phosphorus and very low calcium-optimal phosphorus diets are the least effective. On the stock diet in which the calcium and phosphorus content is optimal, dosages of viosterol several hundred to a thousand times the therapeutic dose produce no detectable injurious effects when fed for long periods. On this diet, the therapeutic dose is quite remote from the toxic level. Metastatic calcification is not the sole injurious effect of viosterol, for necrotic, degenerative and inflammatory changes without calcification occur in the soft tissues when large doses of viosterol are used. Small or moderate doses of viosterol cause resorption of lime salts from the bones. The arterial calcification produced by viosterol is of a specific type and is limited chiefly to the media, as in Mönckenberg's sclerosis, rather than to the intima, as in arteriosclerosis. Viosterol is capable of raising the serum calcium to hypercalcemic levels when calcium is entirely absent from the diet and to elevate it from hypocalcemic levels produced by high phosphorus feeding.

Journal of Bacteriology, Baltimore

23: 281-354 (April) 1932

Biology of Tubercle Bacillus: II. Asparagin and Glycerin Metabolism of Tubercle Bacillus. J. H. Dingle and J. Weinzirl, Seattle.—p. 281.

Observations on Bacillus Coagulans. W. B. Sarles and B. W. Hammer, Ames, Iowa.—p. 301.

Comparative Studies on Natural and Acquired Resistance of Certain Strains of Escherichia Coli to Bacteriostatic and Germicidal Effects of Cations. E. K. Borman, Lexington, Ky.—p. 315.

Improved Method for Cultivation of Anaerobic Micro-Organism. L. G. Herrmann, Cleveland.—p. 331.

Two New Species of Bacteria Causing Mustiness in Eggs. M. Levine and D. Q. Anderson, Ames, Iowa.—p. 337.

Marine Bacteria Commonly Found on Fresh Fish. J. R. Sanborn, Glens Falls, N. Y.—p. 349.

Improved Reagent for Acetyl-Methyl-Carbinol Test. E. Leifson, Baltimore.—p. 353.

Journal of Biological Chemistry, Baltimore

96: 285-571 (May) 1932. Partial Index

Antirachitic Activation of Ergosterol in Absence of Oxygen. H. H. Beard, R. E. Burk, H. E. Thompson and H. Goldblatt, Cleveland.—p. 307.

Factors Influencing Distribution and Character of Adipose Tissue in Rat: II. Effect of Ovariectomy and Feeding with Thyroxine. Lucille L. Reed, W. E. Anderson and L. B. Mendel, New Haven, Conn.—p. 313.

Strophanthin: XXV. Allocation of Lactone Group of Strophanthidin and Related Aglucones. W. A. Jacobs and R. C. Elderfield, New York.—p. 357.

Relation of Glycogen to Water Storage in Liver. H. L. Puckett and F. H. Wiley, Ann Arbor, Mich.—p. 367.

Id.: E. M. MacKay and H. C. Bergman, La Jolla, Calif.—p. 373.

Id.: Reply to Communications of Puckett and Wiley, and MacKay and Bergman. E. M. Bridge and E. M. Bridges, Baltimore.—p. 381.

Effects of Carotene and Vitamin on Oxidation of Linoleic Acid. Betty R. Monaghan and F. O. Schmitt, St. Louis.—p. 387.

*Alleged Increase in Plasma Fats After Injection of Epinephrine. C. N. H. Long and Eleanor M. Venning, Montreal, Canada.—p. 397.

Determination of Magnesium in Blood with 8-Hydroxyquinoline. D. M. Greenberg and Myrtle A. Mackey, San Francisco.—p. 419.

Nature of Sugar of Normal Urine: I. The Phenylosazones. M. R. Everett and Fay Sheppard, Oklahoma City.—p. 431.

Intestinal Nucleotidase and Polynucleotidase. P. A. Levene and R. T. Dillon, New York.—p. 461.

Further Evidence for Existence of a Third Vitamin B Growth Factor for the Rat, Probably Vitamin B_4. Nellie Halliday, with assistance of Margaret J. Nunn and Jennie D. Fisher, East Lansing, Mich.—p. 479.

*Validity of Determinations of Colloid Osmotic Pressure of Serum. A. H. Turner, Copenhagen, Denmark.—p. 487.

*Studies on Magnesium Deficiency in Animals: I. Symptomatology Resulting from Magnesium Deprivation. H. D. Kruse, Elsa R. Orent and E. V. McCollum, Baltimore.—p. 519.

*Studies on Iron Metabolism and Influence of Copper. H. W. Josephs, Baltimore.—p. 559.

Epinephrine: Effect on Plasma Fats.—Long and Venning believe that owing to the fact that, during saponification of alcohol-ether extracts of plasma the dextrose present breaks down to organic acids, the methods of Stewart and White and of Himwich, Friedmand and Spiers are of no value for the estimation of the true plasma fatty acids. A second source of error in these methods is the inclusion by them as "fatty acids" of the phosphoric acid liberated by the hydrolysis of phospholipids. The results obtained by certain workers on the increase in plasma fatty acids after the injection of epinephrine, nocuous stimulation, and fright are in all cases to be largely attributed to the concomitant increases in blood sugar. Analyses of the plasma by a method free from these errors led to different conclusions in all cases that the authors have examined.

Colloid Osmotic Pressure of Serum.—In order to test the reliability of colloid osmotic pressure determinations on serum or plasma, many different membranes were tried by Turner in the Krogh and Nakazawa osmometer. With horse serum as an inner liquid and either in its ultrafiltrate or 0.9 per cent solution of sodium chloride as outer liquid, identical results were obtained for the colloid osmotic pressure with the protein-tight membranes Ultrafeinfilter (Zsigmondy) of 110 and 120 minutes, cellophane No. 600, and the prepared cecum of the rabbit known as fish bladder. This identity of result with such diverse membranes indicates that, since the proteins are known to be held back, the membranes must make such an adjustment of the other serum constituents that the true colloid osmotic pressure is satisfactorily determined by this relatively simple method. The identity of result, further, makes highly improbable any distortion of the readings by electrical properties of the membranes.

Magnesium Deficiency in Animals.—Kruse and his associates successfully prepared a diet containing only 1.8 parts per million of magnesium but otherwise adequate. When young rats are deprived of magnesium by restriction to this diet, they present a characteristic symptom complex which is terminated by early death. The symptom complex comprises vasodilatation, hyperirritability of the nervous system, cardiac arrhythmia, spasticity, and tonic-clonic convulsions. From a discussion of the pathogenesis and manifestations of tetany, the authors suggest that the syndrome produced by magnesium deficiency constitutes tetany. Tetany induced by deprivation of magnesium possesses one symptomatic feature differentiating it from other known types; namely, the vasodilatation. Anorexia and inanition are shown not to be responsible for the syndrome. It is established that magnesium is an essential element for certain bodily activities, growth and life.

Iron Metabolism and Influence of Copper.—Josephs studied the retention of iron and its partition between the hemoglobin and the tissues in rats. It was found that during the nursing period the retained iron was sufficient to account for the gain in hemoglobin, but that, if a diet of milk was continued beyond the nursing period, all the retained iron went to maintaining the tissue iron at a constant minimal concentration which is considered to represent the "function iron" of the tissues. When extra iron was given, this was divided between the hemoglobin and the tissues, most of it going to hemoglobin formation. When copper was given, a larger proportion of the retained iron went to form hemoglobin, the tissue iron was reduced in amount, and the reduction was carried down to but not below the level of concentration that was considered to represent the function iron of the tissues. Copper had no effect on iron retention.

Journal of Nervous & Mental Disease, New York

75: 473-600 (May) 1932

Epilepsy and Congenital Syphilis. K. A. Menninger and W. C. Menninger, Topeka, Kan.—p. 473.
The Neurotic Criminal. P. Getson, Philadelphia.—p. 498.
Cortical Centers of Labyrinth. E. Spiegel, Philadelphia.—p. 504.
I. Preepidemic Encephalitis Lethargica: II. Case Occurring Here in 1906. W. Browning, Brooklyn.—p. 513.
Neuropsychiatric Manifestations and Their Interpretation in Carbon Monoxide Intoxication. A. Gordon, Philadelphia.—p. 520.

Kansas Medical Society Journal, Topeka

33: 149-186 (May) 1932

Acute Laryngotracheitis in Children. H. L. Dwyer, Kansas City, Mo. —p. 149.
Nonsuppurative Osteomyelitis: Presentation of Case of Serous Osteomyelitis. C. B. Francisco and G. M. Tice, Kansas City.—p. 151.
Another Case of Foreign Bodies in Stomach. H. B. Latimer.—p. 154.
Diagnosis and Treatment of Syphilitic Aortitis. D. C. Peete, Kansas City, Mo.—p. 156.
*Generalized Fetal Edema (Hydrops Fetus Universalis): Report of Case. R. R. Wilson and F. C. Helwig, Kansas City, Mo.—p. 158.
Correction of Vesical Neck Obstructions by Means of Resectoscope. N. F. Ockerblad, Kansas City, Mo.—p. 163.
Interpretation of Some Common Neurologic Tests: The Reflexes. B. L. Elliott, Kansas City, Mo.—p. 168.
*Effect of Morphine on Intestine. H. E. Carlson and T. G. Orr, Kansas City, Mo.—p. 171.

Generalized Fetal Edema.—In a series of 2,797 births, Wilson and Helwig observed generalized fetal anasarca in three instances, an incidence of approximately 1 in 1,000 deliveries. They report a case in which a striking degree of fetal edema was present and caused difficulties in the delivery.

Effect of Morphine on Intestine.—According to Carlson and Orr, morphine increases the tone of the jejunum, the amplitude and frequency of peristalsis, and the amplitude of segmentation movements as shown experimentally on the dog. They report a hospital case of morphine poisoning in which good intestinal movements could be heard on auscultation. It is suggested that the beneficial effects of morphine in the treatment of peritonitis, as known clinically, is probably due to the maintenance of good intestinal tone and good contractions, which aids in the prevention of paralytic ileus or which may effect its early cure. The authors consider that it is doubtful whether atropine sulphate in combination with morphine should be used in the treatment of peritonitis, paralytic ileus or intestinal obstruction, since it tends to decrease the tone of the intestine.

Medical Journal and Record, New York

135: 417-460 (May 4) 1932

High Blood Pressure Not a Calamity. R. H. Rose, New York.—p. 417.
Postoperative Hyperventilation. C. E. Haines, New Rochelle, N. Y.—p. 419.
Guinea-Pig Test and Biopsy in Early Diagnosis of Articular Tuberculosis. M. B. Cooperman, Philadelphia.—p. 420.
Bactericidal Power of Antitoxins and Its Limitations: Clinical and Bacteriologic Study. F. Herb, Chicago.—p. 422.
Pressure Test as an Aid in Clinical Diagnosis of Bronchial Asthma. A. H. Fineman, New York.—p. 425.
Possible Relationship Between Dental Decay and General Health. C. F. Bodecker, New York.—p. 426.

Medicine, Baltimore

11: *141-262 (May) 1932*

*Review of Experimental Studies of Nonspecific Inhibition of Anaphylactic Shock. Justina H. Hill and L. Martin, Baltimore.—p. 141.
*Control of Tonus After Injuries to Brain or Spinal Cord of Man. O. R. Langworthy, Baltimore.—p. 225.

Nonspecific Inhibition of Anaphylactic Shock.—In their review of experimental studies of the nonspecific inhibition of anaphylactic shock, Hill and Martin found no facts or any theory that will explain conclusively the definite nonspecific inhibition of anaphylactic shock that is produced by a variety of agents. The theory most in vogue at present is that of changes of colloidal equilibrium. Such changes, involving an increased viscosity and lowered surface tension of the blood, have been shown to have been brought about by certain mineral waters and by ether or chloroform given intravenously. It seems probable also that many of the agents studied cause such changes, although they have not been studied from this point of view.

Control of Tonus After Injuries to Brain or Spinal Cord.—According to Langworthy, injuries to the central nervous system of man often produce marked abnormalities of tone in the striated musculature of the body. He discusses the specific changes after lesions in certain definite portions, such as the spinal cord or the cerebellum. Two common abnormalities, showing as prominent symptoms increased tonus, hemiplegia and Parkinson's disease, are analyzed from the points of view of recent studies of the physiology of tone.

New England Journal of Medicine, Boston

206: 925-978 (May 5) 1932

*Present Day Review of Gastric and Duodenal Ulcer. R. H. Miller, Boston.—p. 925.
Color Photography of Pathologic Specimens. G. A. Moore, Brockton, Mass.—p. 934.
Syphilis of Liver Simulating Acute Surgical Abdomen: Case. A. Feldman, Boston.—p. 937.
Coordination of Community's Health Services. L. I. Dublin, New York. —p. 938.
Need of Occupational Therapy for Cardiac Patients. P. D. White, Boston.—p. 942.
New Instrument for Intestinal Anastomosis. E. L. Young, Jr., Boston. —p. 943.
Some Surgical Aspects of Hepatic Cirrhosis and Splenomegaly. A. T. Bazin, Montreal, Canada.—p. 946.

Gastric and Duodenal Ulcer.—According to Miller, gastric and duodenal ulcers are principally initiated and maintained by disturbances in the acid-alkali balance, and these in turn are due to malfunction of the pylorus, more particularly failure of proper relaxation (achalasia) to allow regurgitation of alkaline duodenal contents. Any treatment must take this into consideration. Gastric ulcer must be carefully watched, to be sure it is not cancer. If it is as large as a 25 cent piece (25 mm.), one should be highly suspicious. In case of doubt, operation is indicated. Duodenal ulcer may be treated medically until the patient elects surgery, and then the simplest reasonable operation should be done. In hemorrhage from ulcer, operation should be undertaken only as the last resort.

206: 979-1026 (May 12) 1932

*Carcinoma of Rectum: Report of Eighteen Radical Resections, with Historical Review. E. P. Hayden, Boston.—p. 979.
Hemophilia: Anaphylactic Treatment of Acute Emergencies by Passive Sensitization: Report of Case. R. C. Eley, Boston.—p. 998.
Can Vital Statistics Be Used to Measure Quality of Maternity Care? J. R. Miller, Hartford, Conn.—p. 999.

Carcinoma of Rectum.—According to Hayden, it is now an established fact that an individual with cancer of the rectum, if operated on reasonably early by one of several extensive procedures, and in the hands of a competent surgeon before, during and after the operation, has an excellent chance of not only leaving the hospital but of being cured. This fact, though well known to those most closely concerned with this type of work, is doubted by a great many physicians because of their own experiences with rectal cancer. No man in general practice, even the busiest, sees many cases of this condition, for they do not appear with great frequency even in a large hospital. It is also a fact that a radical operation, applied to a patient who is further advanced in the disease but still operable, will give him a chance of cure, and if he is not cured he will have a much happier, and a longer, duration of life than if treated in other ways. A combined abdominoperineal resection in one stage with permanent colostomy, as described by Miles, is acknowledged by the surgeons with widest experience in this field to give the best chance of cure. A two-stage procedure, by one of several methods but with the same degree of block dissection, is a necessary adjunct in keeping the mortality down to a reasonable figure and extending the scope of the operation to include the less favorable cases. The author presents a brief review of the evolution of these operations, together with an analysis of eighteen personal cases, some of which illustrate points of especial interest.

New Jersey Medical Society Journal, Orange

29: 291-376 (April) 1932

Tonsil Problem. C. Brown, Kearny.—p. 291.
Symptomatology and Treatment of Thymus Gland Conditions in Children. P. H. Hosp, Newark.—p. 295.
Fatal Poisoning with Oil of Wintergreen. F. W. Lathrop, Plainfield. —p. 303.
Treatment of Heredosyphilis. F. J. McCauley, Newark.—p. 306.
Influenzal Meningitis: Report of Recovery. F. C. Johnson, New Brunswick.—p. 311.
Important Factors in Surgery of Acquired and Congenital Facial Deformities. J. W. Maliniak, Newark.—p. 314.
Hemorrhages in Vitreous of Young People. C. F. Adams, Trenton. —p. 323.
Functional Disturbances of Heart. H. R. Livengood, Elizabeth.—p. 325.
Spontaneous Dislocation. L. Greenberg, Hackensack.—p. 327.
Banti's Disease: Report of an Interesting Case. D. Polowe, Paterson. —p. 330.
Food Poisoning: Report of Forty Cases. F. C. Dinge and Phyllis Stanley, Newark.—p. 333.
Use of Insulin in Tuberculosis: Preliminary Communication. F. M. Allen, Morristown.—p. 335.

New Orleans Medical and Surgical Journal

84: 841-930 (May) 1932

*Infectious Mononucleosis: Glandular Fever. S. Hobson, New Orleans. —p. 841.
Results of Work Done on Fractures of Patella for Past Thirty-Six Years, with Conclusions. E. D. Martin, New Orleans.—p. 846.
Allergic Diseases, with Especial Reference to Those Involving Respiratory Tract. J. P. Henry, Memphis, Tenn.—p. 849.
Painful Feet. E. Hyman, New Orleans.—p. 861.
Esophageal and Gastric Varices. A. E. Gordin, Jackson, Miss.—p. 865.
Congenital Obstruction (Atresia) of Biliary Passage: Report of Case. H. C. McLeod, Hattiesburg, Miss.—p. 868.
Right Side of Abdomen from Surgical Standpoint. J. F. Armstrong, Jackson, Miss.—p. 871.
Pyelographic Studies with Emulsified Light Brominol. W. A. Reed and W. F. Henderson, New Orleans.—p. 876.
Nonunion of Fractures. G. C. Battalora, New Orleans.—p. 879.

Infectious Mononucleosis.—Hobson states that glandular fever is a fairly well defined symptom complex, infectious in origin, of unknown etiology, generally of short duration, and characterized by fever and large lymph nodes, sore throat and the occurrence of numerous abnormal blood cells. Neither the causal organism nor its portal of entry has been proved nor have the pathologic changes been sufficiently studied, even though numerous descriptions of lymph nodes excised during the course of the disease appear in the literature. The symptomatology is similar to that of acute infectious disease. The only physical sign that may be of value in reaching a differential diagnosis is that of the enlarged tender lymph node usually occurring in the region of the neck. At the onset of the disease total leukocytic counts are usually above normal, and during convalescence they are below normal. In some cases the increase in the polymorphonuclear leukocytes occurs at the onset. Sometimes during the course of the disease the blood shows a rather marked increase in abnormal mononuclear cells, some of which abnormal cells are lymphoid in nature while others are monocytes or endothelial leukocytes. The diagnosis of glandular fever is often difficult because of its resemblance to other acute infections and because so many mild cases are encountered. Even though the question of the symptom complex as a distinct entity remains open, the best name for the condition seems to be glandular fever.

Northwest Medicine, Seattle

31: 153-208 (April) 1932

*A Hopeful View of Asthma. R. L. Benson, Portland, Ore.—p. 153.
Acrodynia: Swift's Disease. J. B. Bilderback, Portland, Ore.—p. 161.
Vitamin B Complex: Its Rôle in Infant Feeding in Light of Our Present Knowledge. S. G. Henricke, Portland, Ore.—p. 165.
Use of Subcutaneous Injections of Oil in Infant Nutrition. R. G. Hall, Portland, Ore.—p. 170.
Blood Transfusion in Infancy: Review of Literature, with Especial Reference to Technic and Indications. H. E. Goldsmith, Portland, Ore. —p. 174.
Cerebral Hemorrhage in the New-Born: Its Successful Treatment. N. W. Clein, Seattle.—p. 179.
Whooping-Cough: Use of Vaccine in Its Treatment. M. L. Bridgeman, Portland, Ore.—p. 181.
Treatment of Erysipelas, Diphtheria and Scarlet Fever. J. H. Wells, Portland, Ore.—p. 183.
Lipoid Nephrosis. H. H. Skinner, Yakima, Wash.—p. 185.
Protozoal Infestations of Children: Study in an Orphanage in Oregon. W. B. Owen, Laramie, Wyo.—p. 186.
Nonoperative Skeletal Traction for Reduction of Certain Fractures: New and Effective, but Simple and Inexpensive Method. E. P. Quain, Bismarck, N. D.—p. 188.
Intestinal Obstruction Due to Prolapse of Bowel Through Preformed Opening in Omentum. E. H. McLean, Oregon City, Ore.—p. 193.

Asthma.—According to Benson, the first consideration in a frank case of asthma is to obtain prompt relief for the patient's attacks. Accordingly, diagnosis and treatment must go hand in hand. If attacks are present they must be relieved first by epinephrine, ephedrine, atropine or other specific drug therapy, but never with morphine. The only indication for the latter drug is the desire for temporary relief during cutaneous testing without the use of epinephrine and ephedrine, both of which inhibit the skin reactions. Otherwise, morphine has no place in asthma treatment, as 1/100 grain (0.6 mg.) of atropine acts effectively without morphine and is not attended by the deleterious after-effects. As soon as feasible, the patient is started on a regular regimen of medication, consisting of sodium iodide, tincture of belladonna, and sometimes solution of potassium arsenite and tincture of nux vomica. With the use of these common remedies the attacks are often promptly ameliorated, making the further use of epinephrine and ephedrine unnecessary and allowing the regular diagnostic routine to proceed. A thorough physical examination should be made in every case and a detailed history should include all factors of heredity, environment and symptomatology that apply particularly to the allergic patient.

Oklahoma State Medical Assn. Journal, Muskogee

25: 137-182 (April) 1932

Pneumococcic Meningitis: Case Reports with One Recovery. E. H. Shuller, McAlester.—p. 137.
Diagnosis and Medical Treatment of Peptic Ulcer. J. H. Veazey, Madill.—p. 141.
Conization of Cervix with Electric Scalpel. J. E. Wallace, Tulsa. —p. 143.
Pellagra, with Especial Emphasis on Mental Reaction and Treatment. J. J. Gable and J. L. Day, Norman.—p. 149.
Pathologic Uterine Fundus Bleeding in Early and Late Child-Bearing Periods. W. Long, Oklahoma City.—p. 153.
Cervicitis. K. J. Wilson, Oklahoma City.—p. 157.
Present Day Indications for Cesarean Section. J. H. Robinson, Oklahoma City.—p. 160.
Practice What You Preach. C. Puckett, Oklahoma City.—p. 163.

Pennsylvania Medical Journal, Harrisburg

35: 533-604 (May) 1932

Symposium on Mental Hygiene in Childhood: Pediatrist's Relation to the Problem Child. R. H. Israel, Warren.—p. 533.
Id.: Relation of Organic Disorders to Mental Deficiency. E. A. Whitney, Elwyn.—p. 535.
Id.: Relation of Endocrines to Juvenile Psychoses. E. B. McCready, Pittsburgh.—p. 538.
Symposium on Diseases of Bladder: Some of Complications of Prostatism and Prostatectomy. N. P. Rathbun, Brooklyn.—p. 541.
Id.: Surgical Treatment of Median Bar. J. C. Burt and C. M. Lane, Pittsburgh.—p. 547.
Id.: Treatment of Bladder Tumors. W. H. Haines, Philadelphia.—p. 549.
*Significance of Sugar in Urine. H. T. Kelly, Philadelphia.—p. 553.
Repair Surgery of Eye and Its Appendages. L. C. Peter, Philadelphia.—p. 556.
Pedicled Flap in Ophthalmic Plastic Surgery. E. B. Spaeth, Philadelphia.—p. 560.

Significance of Sugar in Urine.—According to Kelly, sugar in the urine, per se, is not sufficient evidence to warrant a diagnosis of diabetes, as many individuals with sugar in the urine have been observed over many years and are not diabetic. Sugar in the urine accompanied by a hyperglycemia after fasting from ten to twelve hours is indicative of diabetes. The dextrose tolerance test to date is the most reliable readily available method for distinguishing diabetes and renal glycosuria. In untreated cases following the ingestion of 100 Gm. of dextrose, the blood sugar returning to normal within two hours is adequate evidence that the patient is not diabetic. The dextrose tolerance test is dangerous when administered to a patient with an existing hyperglycemia and may convert a mild diabetes into a moderately severe one.

Physical Therapeutics, Elmira, N. Y.

50: 121-160 (April) 1932

Oscillatory Desiccation in Treatment of Accessible Malignant Growths and Minor Surgical Conditions: New Electrical Effect. W. L. Clark, Philadelphia.—p. 121.
Electrosurgery, Past, Present and Future. W. L. Clark, Philadelphia.—p. 139.

Public Health Reports, Washington, D. C.

47: 1043-1093 (May 6) 1932

Standardization of Scarlet Fever Streptococcus Antitoxin. M. V. Veldee.—p. 1043.

Southern Medical Journal, Birmingham, Ala.

25: 441-558 (May) 1932

Cancer of Rectum: Study of One Hundred Case Records. G. V. Brindley Temple, Texas.—p. 441.
*Thrombopenic Granulocytopenia (Agranulocytosis with Hemorrhages). R. R. Kracke, Emory University, Ga.—p. 448.
*Postoperative Care of Foreign Body in Lung in Infants and Young Children. M. F. Arbuckle, St. Louis.—p. 456.
Method of Increasing Specific Resistance of Syphilitic Individual to His Disease. C. C. Dennie, Kansas City, Mo.—p. 462.
Rupture of Kidney. E. Floyd and J. L. Pittman, Atlanta, Ga.—p. 467.
Treatment of Compression Fractures of Vertebrae by Rogers' Frame. J. I. Mitchell, Memphis, Tenn.—p. 473.
Hereditary Ectodermal Dysplasia of Anhidrotic Type. R. Bowen, Memphis, Tenn.—p. 481.
*Value of Schilling Differential Blood Count in Pediatrics. W. A. McGee, Richmond, Va.—p. 484.
Diet and Diabetes. V. E. Simpson, Louisville, Ky.—p. 489.
Emotional Instability as Frequent Cause of Digestive Disorders. J. S. McLester, Birmingham, Ala.—p. 500.
Use of Modified Aschheim-Zondek Test for Pregnancy. H. L. Kincaid and H. J. Rafn, Houston, Texas.—p. 503.
Use of Rabbit in Aschheim-Zondek Test for Pregnancy. Martha A. Wood, Houston, Texas.—p. 508.
Treatment of Carcinoma of Cervix. R. H. Lafferty and C. C. Phillips, Charlotte, N. C.—p. 510.
Cancer of Esophagus. P. Stiles, Birmingham, Ala.—p. 512.
Treatment of Potentially Infected Abdominal Wound, and Its Relationship to Mortality of Acute Infections of Abdomen. H. A. Gamble, Greenville, Miss.—p. 515.
Management of the Asthmatic: Some Points of General Information. B. G. Efron, New Orleans.—p. 519.

Thrombopenic Granulocytopenia.—Kracke presents a brief summary of the important features of granulocytopenia. The syndrome of thrombopenic granulocytopenia, consisting of marked neutropenia, marked thrombocytopenia, slight anemia, normal coagulation and prolonged bleeding time, delayed clot retractility, petechiae, hemorrhages, terminal infection, and death, is described, with case reports. The importance is emphasized of careful differentiation of thrombopenic granulocytopenia, a disease of the bone marrow, and idiopathic thrombocytopenia, a disease presumably of the spleen.

Foreign Body in Lung in Infants and Young Children.—Arbuckle states that the application of suction through the tracheotomy tube is a most satisfactory method of supplying lung drainage and of freeing the airway of obstruction. If one is unsuccessful by this method, the bronchoscope should be employed, even though it is necessary to do this repeatedly. The secretion of mucus should be encouraged rather than discouraged. This will be aided by the free administration of fluids either by mouth or by parenteral methods. No sedatives should be given. Expectorants are indicated. No drugs should be given that dry up the secretion. The oxygen tent is a most important adjunct, by the use of which many lives will be saved.

Value of Schilling Differential Blood Count in Pediatrics.—McGee calls attention to the fact that the use of the Schilling differential blood count reveals much information relative to diagnosis, prognosis and treatment. It serves as a simple yet accurate index of changes taking place in the body in infections. Repeated hemograms are of more value than single determinations, and they reduce the need of total leukocyte counts. Changes in granulocytes often reveal progress or relapse ahead of physical changes, symptoms, fever and total white cell counts. Information obtained from the Schilling counts should be used in collaboration with other clinical signs and symptoms, but a suggestive blood picture should not be ignored even in the absence of clinical symptoms. The present Ehrlich differential count is much less informative and should be replaced by the Schilling classification of leukocytes. The Giemsa or the modified Giemsa stain should gradually replace Wright's stain. The Schilling count is of more relative value than the filament-nonfilament count. It is of particular value among children, as it deals mainly with neutrophilic leukocytes rather than lymphocytes, which predominate in the blood picture during childhood.

Southwestern Medicine, Phoenix, Ariz.

14: 149-192 (April) 1932

Chronic Arthritis: Clinical Grouping. W. P. Holbrook, Tucson, Ariz.—p. 149.
Use of Kirschner Wire in Treatment of Fractures. W. L. Rogers, San Francisco.—p. 153.
Balantidic Dysentery. R. W. Mendelson, Albuquerque, New Mexico.—p. 156.
Altitude Changes in Artificial Pneumothorax Patients. E. A. Gatterdam, Phoenix, Ariz.—p. 158.
Implantation of Biliary Fistula Into Gastro-Intestinal Tract: Case Report and Two Year Follow-Up. W. R. Lovelace, Albuquerque, New Mexico.—p. 159.

West Virginia Medical Journal, Charleston

28: 193-240 (May) 1932

Observations on Treatment of Meningitis. G. M. Lyon, Huntington.—p. 193.
*Clinical Study of Powdered Whole Milk in Infant Feeding. A. E. Amick, Charleston.—p. 196.
Diarrheas of Children. G. Daniel, Beards Fork.—p. 199.
Modern Diuretics. R. M. Wylie, Huntington.—p. 204.
Plea for Incurables, for Alleviation of Their Suffering. A. P. Butt, Elkins.—p. 207.
Surgical Treatment of Peptic Ulcer. I. Abell, Louisville, Ky.—p. 209.
Vitamins. D. A. Watkins, Monongah.—p. 214.

Powdered Whole Milk in Infant Feeding.—On the basis of a clinical experience with 100 infants given powdered whole milk during a two-year period, Amick concludes that when an infant is deprived of breast milk and has demonstrated an inability to tolerate cow's milk, or when fresh cow's milk of unquestionable purity is not available, the powdered whole milk as produced by a spray process meets a greatly needed demand. Fruit juices and cod liver oil should be added as a routine, as with fluid milk. When properly modified and supplemented, all the nutritive requirements are satisfied. As a complementary food it was wholly satisfactory. When given in concentrated solution, thus increasing the caloric intake without necessitating the ingestion of large amounts of fluid, it serves a good purpose. When one desires to give a high proportion of protein and salts, it can be given to advantage in the concentrated form. The purity and keeping qualities of this powdered milk are a blessing in the hands of those without modern refrigerating facilities. It is not any more expensive than other types of milk.

Wisconsin Medical Journal, Madison

31: 290-363 (May) 1932

- *What Every Doctor Should Know About Pathology. J. C. Bloodgood, Baltimore.—p. 297.
- Encouragements in Surgical Treatment of Carcinoma of Colon and Rectum. F. W. Rankin, Rochester, Minn.—p. 302.
- Differential Diagnosis of Ulcerative Lesions of Large Intestine and Rectum, with Especial Reference to Proctoscopic Examination. A. C. Gorder, Milwaukee.—p. 308.
- Acute Appendicitis. J. Dean, Madison.—p. 313.
- Intravenous Cholecystography: Technic and Analysis of Eight Hundred Cases. L. V. Littig and J. N. Sisk, Madison.—p. 316.
- External Cephalic Version. J. B. Vedder, Marshfield.—p. 319.

Pathology.—Bloodgood considers that the most important thing every physician should know about pathology is that cancer is rapidly becoming a microscopic disease; that all patients whose local lesion has not assumed the definite clinical picture of cancer have a better chance of a cure without mutilation if the diagnosis is made at the operation from frozen sections examined by a competent pathologist. If every member of the medical profession could be convinced of this, the introduction of microscopic pathology into the operating room as an integral part of the operating room technic would be accomplished more quickly and the entire medical profession would be in a better position to meet the new demands of an enlightened public who come under their observation either for a diagnostic survey when apparently well or after the first warning from their local trouble. Many diagnostic tests can be made by technicians, such as the basal metabolism test, blood counts, chemical examination of the blood, urinalysis, blood pressure, and kidney function. Other tests can be made only by the specialist; for example, examination with the ophthalmoscope and the laryngoscope; interpretation of roentgenograms, which can be taken by the technician; interpretation of the microscopic section, and interpretation of the electrocardiogram. Not every physician is expected to make or even interpret these laboratory tests, but he should know when these must be made, because, unless they are made in time, their diagnostic value becomes of less and less value to the patient. In spite of the great importance of the routine clinical history and careful physical examination, the importance of these laboratory tests and special examinations increases as patients seek advice the moment they are warned, or report annually or semiannually for a diagnostic survey. Today, more than ever before, the expertness of the surgeon, the completeness of the preoperative preparation, and the reduction of the dangers of anesthesia and shock may be effaced because of an incorrect preoperative or operative diagnosis, owing to the fact that frozen sections were not made to direct the character and extent of the operative procedure.

Yale Journal of Biology and Medicine, New Haven

4: 649-748 (May) 1932

- Eli Ives: Practitioner, Teacher and Botanist. G. Blumer, New Haven, Conn.—p. 649.
- The Beginnings of Obstetrics in America. H. Thoms, New Haven, Conn.—p. 665.
- *Effect of Diet and Pituitary Growth-Hormone on Hypophysectomized Rats. K. W. Thompson and D. W. Gaiser, Boston.—p. 677.
- Sterility Study: Essentials of Diagnostic Survey. W. H. Cary, New York.—p. 691.
- End-Results in Treatment of Carcinoma of Stomach. A. W. Oughterson, New Haven, Conn.—p. 711.

Growth of Hypophysectomized Rats.—Thompson and Gaiser describe experiments in which they noted that totally hypophysectomized rats failed to gain weight when given a growth-promoting diet. When given injections of pituitary growth hormone, three groups of hypophysectomized rats gained weight in proportion to the excellence of their diet, and their gain was comparable to the gain of normal animals on the same diets receiving the same injections. Hypophysectomized rats receiving injections of growth hormone did not show a greater uniformity of growth rate than did normal animals under the same treatment. The authors feel that infections played an important part in the lack of uniformity. Withdrawal of the growth extract resulted in a loss of weight of hypophysectomized animals fed growth-promoting diets. A short method for the assay of potency of growth hormone is suggested. The mortality of hypophysectomized rats on the best diet was about half the mortality of those on the poorer diet. Growth hormone failed to cause regeneration of the sexual apparatus, but it caused infantile hair to be replaced by normal hair.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

16: 257-320 (May) 1932

- Vestibulo-Ocular Reflex Paths. L. Paton.—p. 257.
- Morphologic Study of Lateral Geniculate Body. W. E. L. G. Clark. —p. 264.
- Tuberculin in Ophthalmology. F. A. Williamson-Noble.—p. 285.
- Hardness of Eye: Historical Note. A. Sorsby.—p. 292.
- Family of Groenouw's Dystrophy. E. V. Srinivasan.—p. 296.

British Medical Journal, London

1: 785-806 (April 30) 1932

- *Origin of Tumors. J. P. Lockhart-Mummery.—p. 785.
- Note on Operative Treatment of Facial Palsy, with Account of Some Animal Experiments. C. Ballance.—p. 787.
- *Ostearthritis. M. B. Ray.—p. 789.
- Case Illustrating Failure of Intravenous Liver Therapy in Pernicious Anemia. J. G. McCrie.—p. 792.
- Nomenclature of Eclampsia. B. Solomons and F. Bourke.—p. 794.
- Tooth Extraction and Chronic Infective Endocarditis. H. H. Brown. —p. 796.

Origin of Tumors.—According to Lockhart-Mummery, the essential difference between a normal cell and a tumor cell is one of behavior, not of apparent structure. The tumor cell grows faster than the normal cell. There are two kinds of reproduction—that which produces a new individual, and that which results in the replacements of injured or worn out cells in the tissues. All cells, both germ cells and somatic cells, breed true to their parent cells, and this breeding is controlled by the genes in their nuclei. Changes or mutations of the genes in the nuclei may occur, and, when they do, the daughter cells will always breed true to the mutation. Tumors are the result of a mutation of the genes controlling division of somatic cells.

Ostearthritis.—Ray states that although in many respects ostearthritis may be looked on as a local rather than a general disease, the fact remains that its manifestations are associated with degenerative conditions. Treatment must therefore be directed toward sparing the patient any unnecessary metabolic burdens. A good working rule to effect this is to estimate the calorific value of the ordinary diet the patient is in the habit of taking, and to reduce it by one third. This is especially applicable in the case of well nourished plethoric individuals, which so many of the subjects are. There is usually an increased blood pressure, and the blood uric acid is apt to be high. For this reason the diet should follow closely the lines adopted for gouty patients. Besides avoiding foods rich in purines, the patient should be ensured an adequate supply of vitamins. This is of prime importance, because ostearthritis is undoubtedly associated with the absorption of toxins from a sluggishly acting intestine. Good results frequently follow measures directed toward changing the character of the intestinal flora, such as by the use of Bulgarian soured milk. In addition to these general measures, there are certain physical methods of treatment which are of the greatest value in restoring movement to stiffened joints and muscles and in the relief of pain. For the first of these the deep pool bath is extensively used. It is of a sufficient depth to allow a patient to stand upright and to walk a step or two, and wide enough to permit exercises. Its temperature is kept at about 100 F (38 C.). Combined with the pool is an underwater douche at a temperature of about 10 degrees above that of the bath. This has a powerful effect on the skin circulation and in itself constitutes an efficient form of massage, as well as relieving pain. As all objects weigh less in water than in air, a limb immersed in water can be moved with much less fatigue than in ordinary circumstances. The water supports the limbs, and movements are permitted that would be otherwise impossible. In addition to the actual mobilization of a stiffened joint, the fact that movement is possible at all has an excellent mental effect on the patient, and he is thereby encouraged to persevere in his efforts. For the relief of pain, heat in some form or another is a sovereign remedy. To be effectual it should be intensive, or as hot as can be borne. It may be applied in various ways—the hot immersion bath with an underwater douche 10 degrees higher than the bath, radiant heat, or the high-frequency current (diathermy). In deep-seated parts, such as the hip, diathermy is the method of choice. For local applications to more accessible parts the hot pack of peat, mud or paraffin wax is of value. As, owing to the immobilization of the affected joint, the muscles which control it are apt to waste, underwater massage and manipulation—given by either the Aix or the Vichy system—will restore their tone and at the same time remove effusions that are liable to form as a result of the sluggishness of the blood and lymph circulation.

Journal of Physiology, London

74: 343-498 (April) 1932

- *Control of Circulation Through Liver. W. Bauer, H. H. Dale, L. T. Poulsson and D. W. Richards.—p. 343.
- *Influence of Work on Calorigenic Action of Thyroxine. W. M. Boothby, O. B. Buckley and C. M. Wilhelmj.—p. 376.
- Some Fetal Blood Pressure Reactions. G. A. Clark.—p. 391.
- Effect of Thyroid Feeding on Oxygen Consumption of Heart and Other Tissues. W. Dock and J. K. Lewis.—p. 401.
- Regional Variations in Sensitivity to Flicker. R. S. Creed and T. C. Ruch.—p. 407.
- Lapicque's Canonical Strength Duration Curve. W. A. H. Rushton.—p. 424.
- Effect of Length on Resting Metabolism of Muscle. T. P. Feng.—p. 441.
- Thermo-Elastic Properties of Muscle. T. P. Feng.—p. 455.
- Changes in Carbon Dioxide Pressure and Hydrogen Ion Concentration of Arterial Blood of Man Which Are Associated with Hyperpnea Due to Carbon Dioxide. C. G. Douglas and R. E. Havard.—p. 471.
- *Effects of Intestinal Rhythm on General Blood Pressure. J. Barcroft, Y. Nisimaru and F. R. Steggerda.—p. 490.

Control of Circulation Through Liver.—Bauer and his associates describe a scheme for complete perfusion of the liver, with records of arterial and portal inflows, hepatic outflow and liver volume. In addition to vasomotor controls of the inflow, the outflow from the dog's liver is controlled by a sluice mechanism, closed by histamine and opened by epinephrine or by sympathetic nerve impulses. This sluice mechanism is located near the caval orifices of the main hepatic veins. Both epinephrine and histamine appear to produce a relatively weak constriction of deeper veins.

Calorigenic Action of Thyroxine.—Boothby and his associates studied the effect of eleven intravenous injections of 10 Gm. of thyroxine on the metabolism of a dog over a period of nine months, divided into three periods. In the first and third periods of 111 and 64 days, the dog did no work. In the second period of 115 days, it was exercised on a treadmill. Throughout the experiment the dog was on a constant weighed diet, containing 2.93 Gm. of nitrogen and 480 calories each day. Average nitrogen equilibrium was maintained in all three periods. The urine nitrogen averaged 2.65 Gm., that in the feces and hair shed 0.24 Gm.; in all, 2.89 Gm. daily. Immediately after the injection of thyroxine there was a temporary negative nitrogen balance, followed by a compensatory positive balance after which equilibrium was restored. During the first period the respiratory quotient for all days except the first four after each injection averaged 0.82, for the second period 0.81, and for the third period 0.83. The dog lost weight in the second period. As it was in nitrogen equilibrium, this loss must have been due to loss of fat, and the heat value of fat corresponding to the loss in weight was calculated to be equivalent to the energy of the work. It was also calculated that the combustion of this amount of fat would lower the respiratory quotient from 0.82 to 0.81, as in fact found. During the first four days after injection of thyroxine the respiratory quotient was reduced to 0.77, 0.75 and 0.76 in the three periods, respectively. This decrease was greater than could be accounted for by the amount of fat needed to meet the increased energy requirements. The nitrogen excretion was increased immediately after injection of thyroxine, mainly owing to increased excretion of urea, and to a slight extent of creatine. The amounts of the other nitrogenous products did not vary significantly. Compensatory nitrogen retention followed for a few days, owing to decreased excretion of urea. Following exercise the decay curve of thyroxine decreased less rapidly than in the preliminary control period, and this effect continued throughout the final control period. The total calorigenic action of 10 mg. of thyroxine averaged 220 calories in the first period, 449 calories in the second period with exercise, and 487 calories in the third period. Exercise, therefore, instead of decreasing, increased the calorigenic action of thyroxine, and this increase persisted for many days after the exercise was stopped.

Intestinal Rhythm and Blood Pressure.—According to Barcroft and his associates, the intestine possesses the same kind of rhythm as the spleen, the duration of the wave being about twenty to fifty seconds, as recorded by plethysmographic methods. These rhythmic contractions and relaxations of the intestine have a simultaneous effect on general blood pressure. This is less marked than in the case of the splenic rhythm. These rhythmic contractions of the cat's intestine can still be recorded after removal of the spleen and suprarenals, also after denervation of the intestine.

Lancet, London

1: 919-970 (April 30) 1932

- *Acute Mastoid Disease. S. Hastings.—p. 919.
- *Heroin Addiction in Egypt and Its Treatment During Withdrawal Period. A. G. Biggam, M. A. Arafa and A. F. Ragab.—p. 922.
- *Spontaneous Lactation Associated with Enlargement of Pituitary: Report of Two Cases. D. Krestin.—p. 928.
- Speech and Intelligence. A. G. Morison.—p. 931.

Acute Mastoid Disease.—According to Hastings, it is important to remember that for practical purposes all acute and chronic infections of the mastoid bone follow disease of the middle ear. It is possible that some cases of tuberculous mastoid may arise without previous otitis, and cases of typhoid and syphilitic disease of the mastoid are also occasionally seen. A severe injury may start mastoid trouble. As a general rule, however, one may say that mastoid disease is preceded by infection of the middle ear, though this may clear up completely before the mastoid infection gives evidence of its presence. The author first of all recalls a few points in the anatomy of this region. Infection of the middle ear always takes place by way of the eustachian tube, so that as long as this tube is patent, whatever one may do to the mastoid or middle ear, reinfection can always take place. The mastoid antrum and cells may be regarded as diverticula from the middle ear, and whenever an acute infection of this cavity occurs there is pathologic evidence that the mucous lining of the mastoid antrum and cells is also more or less involved. As a rule the mastoid cells get larger the farther one passes from the antrum, the largest cell being usually in the mastoid process at its tip. In very acute cases the mastoid infection may be so severe as to cause acute osteomyelitis of the mastoid bone. As a general rule, however, mastoid symptoms calling for surgical treatment develop only when pus is retained under tension, and for this to happen there must be obstruction at one of three points; namely, the eustachian tube, the aditus, or the communication between the mastoid antrum and one or more of the cells. When the eustachian tube is the seat of the obstruction, the mastoid symptoms will be relieved by a free incision in the membrana tympani. When the obstruction is in the aditus and is not relieved spontaneously, nothing short of opening the mastoid antrum will effect a cure. Cases in which the obstruction is situated between the mastoid antrum and the cells usually come on relatively late, and all trouble in the middle ear and antrum may have cleared up meanwhile.

Addiction to Diacetylmorphine.—Biggam and his associates treated a series of 102 addicts on a special substitution scheme, diacetylmorphine being stopped at once and sedative drugs given to alleviate the withdrawal symptoms. Under this line of treatment the patient can be kept comfortable and almost free from symptoms during the breaking off period. The sleeplessness which is usually such a marked and distressing feature of the period following withdrawal can be completely relieved in 80 per cent of the cases, from six to eight hours' sleep being obtained each night even during the first four days. Not infrequently patients who were reported as not sleeping satisfactorily during the night were found sound asleep when they were visited during the day time. The 20 per cent reported as not obtaining good sleep usually slept for from two to four hours during the first three or four days after stopping the drug. The gastro-intestinal symptoms were never troublesome on this substitution treatment and were present in only about half the cases, and then only to a slight degree. Sneezing, yawning and lacrimation were slight and caused little or no inconvenience. Under this scheme of treatment the sedative drugs morphine, phenobarbital, intramuscular magnesium sulphate, and paraldehyde are gradually reduced, and the patient finishes all drug treatment by the end of the seventh day. Occasionally, however, when a patient showed any marked discomfort during any stage of the withdrawal period, it was arranged that he should have his previous day's treatment repeated instead of going on with the next day's reduction, but this change was seldom found to be necessary. This method of substitution treatment the authors consider most satisfactory, especially when the confidence of the addict can be obtained, and it seldom fails to make his withdrawal period comfortable. It entails frequent treatment and many intramuscular or hypodermic injections, but this all tends to have a beneficial mental effect on this type of individual and is consequently more advantageous than otherwise.

Spontaneous Lactation and Enlarged Pituitary.—Krestin reports two cases of spontaneous lactation associated with enlargement of the pituitary. He calls attention to the fact that there appears to be an established relationship between the anterior lobe of the pituitary and mammary activity, at least under experimental conditions. Whether the power to stimulate lactation is inseparably vested with the growth hormone, or whether a separate "mammary" hormone will eventually be isolated, is a matter that must await further experimental work. So far, mammary activity has not been induced by the use of the aqueous acid maturity-stimulating hormone isolated by Evans and Simpson.

Quart. Bull., Health Org., League of Nations, Geneva

1: 1-157 (March) 1932

Immunization Against Diphtheria: Resolutions of the Conference Held in London in June, 1931.—p. 1.
Medical Education in England. G. Newman.—p. 7.
The Milk Supply of North American Cities. R. Burri.—p. 46.
Tropical Pneumonia. R. Gautier.—p. 64.
*Second Analytic Review of Reports from Pasteur Institutes on Results of Antirabies Treatment. A. G. McKendrick.—p. 110.
Floods in China: Report of Medical Director of Health Organization on the Work Undertaken to Coordinate the Campaign Against Epidemics.—p. 142.

Statistics on Rabies.—In an analytic review of reports from Pasteur institutes on the results of antirabies treatment, McKendrick did not find decisive evidence, apart from liability to postvaccinal paralyses, of the superiority of any one of the various methods of treatment that have been employed. Within the European group, the differences between the death rates of the various institutes are not greater than would be expected as the result of chance variations. A similar statement is also true with regard to the non-European group, but it is not true with regard to the whole statistics embracing the two groups. It is, however, to be noted that the statistics as submitted indicate a probable advantage in favor of modified dilution methods of treatment as compared with the others. Further analysis demonstrates the presence of factors which partly account for the figures, apart from intrinsic superiority of the method; but, when all allowance is made for these factors, there appears to remain a certain amount of evidence in favor of this method as compared with the others. It should be emphasized, however, that the validity of such a conclusion depends entirely on the assumption that no unknown circumstances of importance are operating which might influence the figures decisively in favor of the method. The figures relating to the occurrence of postvaccinal paralyses after treatment by the different methods are given in detail. The proportion of accidents after treatment by dried or glycerinated cords is much lower than was found in a previous review but is still much greater than after treatment by killed vaccines.

Japanese Journal of Obstetrics and Gynecology, Kyoto

15: 1-72 (Feb.) 1932

Supravaginal Amputation of Pregnant Uterus by Vaginal Route. H. Okabayashi.—p. 2.
Experimental Study of Krönig's Operation: Part I. Histologic Investigation. T. Kumamoto.—p. 6.
Id.: Part III. Effects of Krönig's Operation and Roentgen-Ray Irradiation on Transplanted Sarcoma of Uterus in Rabbit. T. Kumamoto.—p. 30.
Id.: Part IV. Pharmacologic Sensibility of Uterus Extirpated After Ligation of Afferent Blood Vessels. T. Kumamoto.—p. 35.
Investigation of Placental Ferments in Various Stages of Pregnancy. M. Abe.—p. 44.
Biologic Investigation of Iron Metabolism. S. Inoue.—p. 53.
Treatment of Leukorrhea by "Spuman." H. Matsuoka and H. Kawakami.—p. 70.

Paris Médical

1: 409-424 (May 14) 1932

Intersexual States. P. Sainton.—p. 409.
*Perinephric Phlegmon Due to Bacillus Enteritidis. G. Andrieu, Idrac, and Maroger.—p. 418.

Perinephric Phlegmon Due to Bacillus Enteritidis.—Andrieu and his associates report a case of perinephric phlegmon due to Bacillus enteritidis. They are of the opinion that, while gastro-enteric infections produced by B. enteritidis are usually recognized, the infections of typhoid nature which are produced by this bacillus, with or without localization in an organ, are often not recognized and consequently the organism may be much more of a factor in human pathology than is generally believed. In the case reported, two types of organisms, identified as B. enteritidis and enterococci, were isolated from the abscess. In direct smears the gram-negative bacillus predominated in the proportion of 50 to 1. The bacillus isolated from the patient was agglutinated by the patient's serum in 1 : 500 dilution, stock cultures of B. enteritidis were agglutinated in 1 : 400 dilution and typhoid-paratyphoid strains were not agglutinated. Fecal examinations were negative for typhoid-paratyphoid bacilli and B. enteritidis. A few months before the phlegmon was drained, the patient had recovered from a typhoid infection, the origin of which was not determined because serum reactions were performed only with typhoid-paratyphoid cultures. During this infection, abdominal pains had developed, which gradually localized in the left lumbar region and, finally becoming acute, led to hospitalization and discovery of a perinephric phlegmon. The authors think that the typhoid infection was probably due to B. enteritidis and that renal localization of the bacillus during the infection was followed by invasion of the perirenal adipose tissue. The virulence of the organism was apparently increased by the bacteriologic trauma produced by the enterococcus, undoubtedly of intestinal origin. The authors think this case corroborates the opinion that infections of typhoid nature due to B. enteritidis are not as rare as supposed. While the enteritic or choleriform type of infection is usually recognized through its epidemic nature and etiology (contaminated meats), the typhoid form is often mistakenly diagnosed, especially when the cases are few or isolated and the etiology cannot be traced. Bacteriologic examination is the only certain diagnostic measure. The importance of perfect technic is stressed. If only serologic tests are made, a negative result with typhoid-paratyphoid bacilli should be followed by serum agglutination tests with B. enteritidis. If an organism with the cultural characteristics of the paratyphoid B bacillus is isolated from the blood, urine, feces or pus, agglutination tests should be performed, and if it is not agglutinated by the corresponding antiserum, the reaction with enteritidis antiserum should be tested.

Presse Médicale, Paris

40: 773-788 (May 14) 1932

Comparison of Results of Interferometry and Basal Metabolism in Hyperthyroid Conditions. M. Laignel-Lavastine and Y. Boquien.—p. 773.
Anatomy and Etiology of Obstetric Intracranial Hemorrhages in the New-Born. J. Voron and H. Pigeaud.—p. 774.
*Insidious Lymphosplenic Syndrome with Hyperleukocytosis and Lymphocytosis Spontaneously Curable. F. Codvelle and R. Sohier.—p. 776.

Insidious Lymphosplenic Syndrome Spontaneously Curable.—Codvelle and Sohier report the case of a man, aged 25, who at hospitalization presented the syndrome of asthenia, enlarged axillary lymph nodes without periadenitis, hypertrophy of the spleen, and leukocytosis with marked lymphocytosis. The general condition of the patient, a vigorous athletic type, was good and his only complaint was of great fatigue at the slightest effort. There was no incident or febrile episode to mark the beginning of the disease, and nothing in the anamnesis to throw light on the case. Therapy was abstained from while permission was being awaited for a biopsy, which was not received. In a few weeks the total leukocyte count dropped from about 22,000 to 14,000, with a reduction of lymphocytes from 76 per cent to 60 per cent. The hypertrophy of the spleen regressed, while that of the lymph nodes persisted for a time. The patient regained his strength. In a few months the leukocytic equilibrium returned, with 34 per cent lymphocytes in a total leukocyte count of 9,000, and 62 per cent polymorphonuclear neutrophils as opposed to 17 per cent at the first examination. In discussing the problem of classifying this case, the authors compare the syndrome described with that of malignant lymphogranulomatosis, lymphatic subleukemia, a lymphocytic increase in the course of aleukemic lymphomatosis, pseudoleukemia and acute benign lymphadenosis. They find that the case reported does not correspond perfectly to any of these classifications either because of hematologic or clinical differences, or both.

Revue de Chirurgie, Paris

51: 229-318 (April) 1932

*Biliary Lithiasis: Personal Statistics of One Hundred and Forty-Five Cases. M. G. Bachy.—p. 229.
Vertebral Angioma. Clavelin and Gauthier.—p. 308.

Biliary Lithiasis.—Bachy presents a comprehensive study of 145 cases of biliary lithiasis in which he performed surgical intervention and compares the conclusions drawn from it with those of his thesis of 1913 on cholecystectomy in biliary lithiasis, which was based on eighty observations obtained from others. The case reports are grouped according to the type of biliary lithiasis which they represent. Each type is briefly discussed as to pathogenesis, symptomatology and prognosis, and the forms of intervention practiced in the cases belonging to that type are reported. The cases comprise the following types of biliary lithiasis: intestinal occlusion by biliary ileus, acute peritonitis with closed and with perforated biliary bladder, neoplasm secondary to lithiasis, acute cholecystitis, chronic cholecystitis, cholecystoceles, cholecystitis with pancreatitis, calculous cholecystitis complicated by inclusion of calculi in the common bile duct, and cholecystitis with predominating digestive symptoms. The author discusses the general indications for operation and the preoperative and postoperative care as well as the choice of an anesthetic. He lists the various types of incisions employed in his interventions; Sprengel's transverse incision was practiced in the majority of cases. The main steps of the operative technic and the precautions to be observed in the course of the operation are reviewed. The author draws several major conclusions from his study. He considers medical treatment of biliary lithiasis insufficient for the cure of calculous cholecystitis, but it should always be associated with the surgical treatment. Cholecystectomy is given first place in the therapy of calculous cholecystitis. The necessity of draining the common bile duct, especially when there is a concomitant pancreatitis, is insisted on and the danger of pancreatitis is stressed. The drainage of the principal biliary ducts, when there is lithiasis or infection, is necessary and gives excellent results. Cholecystectomy should be performed from the neck toward the bottom, but one should not remove the cystic duct if one wishes to avoid postoperative annoyances. It is necessary to leave one cigaret drain in contact with the stump of the cystic duct. The author considers cholecystostomy an easy and safe operation and ranks it second among therapeutic measures in biliary lithiasis. Treatment of patients operated on for biliary lithiasis must be continued for a long period. The digestive disturbances and pains sometimes observed usually recede readily with appropriate treatment.

Schweizerische medizinische Wochenschrift, Basel

62: 465-488 (May 14) 1932

Studies on High and Highest Atmosphere. F. W. P. Götz.—p. 465.
Significance of Activity of Swiss Institute for Investigations on High Altitude Climate and Tuberculosis in Davos. R. Wolfer.—p. 468.
Confusion in Investigations on Physiologic Significance of High Altitudes Due to False Meteorological Conceptions. R. Wolfer.—p. 470.
Treatment of Habitual Constipation. E. Renold.—p. 471.
*Sojourn in Lowlands for Tuberculous Patients from High Mountains. R. Campbell.—p. 472.
Limits and Necessity of Cooperation Between Physiologic Climatology and Climatophysiology. C. Dorno.—p. 474.

Sojourn in Lowlands for Tuberculous Patients from High Mountains.—Campbell calls attention to the fact that tuberculosis in persons who live on high mountains is often not favorably influenced by the high altitude climate. He observed that for such patients a sojourn in the lowlands is often much more beneficial. After a stay of several months in the lower altitudes, a return to the high mountains is again a new stimulation and may have a curative influence. The author also thinks that tuberculous patients who have stayed in the high mountains for a prolonged period and who no longer show favorable effects from the high altitude climate would perhaps profit by a repeated change between higher and lower altitudes. He is convinced that the changes in altitude, not the altitude itself, is the most curative factor. However, the author does not wish to discredit the therapeutic value of the high mountain climate; on the contrary, he is convinced that for the majority of patients with tuberculosis it is highly effective.

Policlinico, Rome

39: 141-212 (March 15) 1932. Surgical Section

Forms of Peritoneal Endothelioma of Uncertain Origin in Gynecology. L. Firrao.—p. 141.
*Bilateral Carcinoma of Breasts Associated with Unilateral Tuberculosis. C. Panà.—p. 155.
Bacteriologic and Anatomic Study of Appendicitis. N. Sette and I. Barcaroli.—p. 167.
Experimental Hydronephrosis. L. Sussi.—p. 201.

Bilateral Carcinoma of Breasts Associated with Unilateral Tuberculosis.—Panà reviews the literature of breast cancer associated with tuberculosis, stating that: 1. A neoplastic proliferation may appear in a breast which has been tuberculous for a long time. 2. The tuberculous lesion may occur in an early developed tumor. 3. The two diseases can occur simultaneously with or without the development of one stimulating that of the other. In the opinion of the author, bilateral tumors are caused by malformation of embryonic segments, lesions of the spinal medulla of a metameric type, as well as generalized neoplastic diathesis. In the author's case a form of tuberculosis associated with carcinoma was found only in the left breast. In the same breast the notable quantity of tuberculous nodules, the great extension of the process, and the marked existing sclerosis induced the belief that the tuberculous process dated far back and preceded the appearance of the neoplasm. The lack of cutaneous and perivascular tuberculous lesions indicates that the tubercle bacilli did not enter the breast by the lymphatic route or by the blood stream. Although the author has no evidence of it, penetration undoubtedly occurred through the milk ducts.

Tumori, Milan

6: 101-200 (March-April) 1932

Experimental Malpighian Metaplasia of Gastric Mucosa of Dog from Applications of Nicotine and Tobacco Smoke. A. Moratti.—p. 101.
*Topical Action of Insulin on Cancers of Skin. S. F. Gomes da Costa.—p. 140.
Anatomoclinical Study of So-Called Metatypical Form of Cancer of Skin. G. Sciacchitano.—p. 157.
*Bilateral Lymphoblastoma of Breast. G. Pasqualino.—p. 172.

Topical Action of Insulin on Skin Cancers.—Gomes da Costa states that daily applications of insulin to ulcerated cancers of the skin cause cicatrization and at least partial regression of the neoplastic tissue. The healing process begins at the edges of the ulcer and progresses rapidly. The newly formed epithelium covering the cancerous tissue is a pavement epithelium which is continuous with the healthy skin. This epithelium covers the neoplastic tissue without being involved by the cancerous process. The neoplastic tissue in the depth of the lesion often disappears. The author believes that the skin cancers that are most sensitive to the topical action of insulin are planocellular. The various solutions of insulin with different p_H have identical action on the healing and regression of neoplastic tissue. If they are boiled from two to three hours they lose their hypoglycemic action as well as their healing action on ulcerated skin cancers.

Bilateral Lymphoblastoma of the Breast.—Pasqualino describes the symptomatology of a patient with bilateral lymphoblastoma of the breast as two diffuse and indolent tumefactions in the mammary glands during pregnancy, reddish blue, with an apparent venous reticulum, being of hard elastic consistency and adhering to the skin and its substrata, with precocious metastatic spread by the lymphatic route and the blood stream. Clinically the disease must be differentiated from gravidic hypertrophy and from acute breast cancer (carcinomatous mastitis). Hypertrophy of pregnancy is excluded by the rapidity of its evolution and by the presence of glandular engorgements. Carcinomatous mastitis is excluded by the lack of pronounced inflammatory symptoms. Small round cell sarcoma is not likely to be confused clinically with the disease, whereas microscopically the sarcoma is similar to the lymphoblastoma and is distinguished from it only because it contains a single type of cells, similar to the lymphocyte, and capable of reproduction. In the lymphoblastoma, besides the lymphocytes and mature cells, there are also found lymphoblasts and immature cells, often in the stage of mitosis.

Prensa Médica Argentina, Buenos Aires

18: 1523-1574 (April 20) 1932

Delmas Method in Labor. J. C. Lascano.—p. 1523.
*Alterations of Electrocardiogram in Mitral Stenosis. A. Battro.—p. 1532.
*Serologic Reactions for Diagnosis of Syphilis: Influence of Hydrogen Ion Concentration of Medium. C. L. Ducco.—p. 1552.
Increase of Physical Resistance by Administration of Minute Doses of Metals. F. Schreiber and B. Villinger.—p. 1559.
Relation of Cardiovascular System and Endocrinology. P. M. Barlaro.—p. 1566.

Alterations of Electrocardiogram in Mitral Stenosis.—Battro studied the variations in the electrocardiogram in sixty-four cases of mitral stenosis. From his observations he reaches the following conclusions: The modifications of the auricular P complex are of capital importance in the diagnosis and prognosis of mitral stenosis. The signs of hyperactivity or hypertrophy of the auricle are manifested in the electrocardiogram by increased height of the P wave, and by increased amplitude of its base, above 0.10 second. The P wave in these cases may or may not have notches, bifidity or reduplication. A diminished elevation of the P wave (under 1 mm. of height) is an obvious indication of a lessened contractile energy of the auricular myocardium, during the evolution of mitral stenosis. A short P wave coincides frequently with the onset of cardiac insufficiency or precedes the appearance of auricular fibrillation. A short P wave has sometimes a long duration, 0.12 second. The improvement of the clinical condition coincides with a new increase in the height of the P wave, although the amplitude of its base does not return to normal but continues wider than normal for some time, owing to the persistence of a slight degree of auricular dilatation. In cases of mitral stenosis with total compensation, the T wave is large, being from 5 to 6 mm. in height. Reversed T wave and reversed RT segment were observed in thirteen cases in the group of the author's patients. Eight times a reversed T wave was observed in leads 2 and 3 (61 per cent) and in a case of mitral stenosis with arterial hypertension there was a reversed T wave in leads 1 and 2. The inversion of the T wave in leads 2 and 3 appeared in the author's cases after a crisis of auricular fibrillary flutter and was interpreted as having been caused by an overcharge on the right ventricle. The predominant strain of the right ventricle does not appear constantly in the electrocardiogram. The largest rate of predominant strain of the right ventricle is given by cases showing fibrillation (80 per cent), and by cases showing a manifest decompensation. Mitral stenosis with fibrillation and without predominant strain of the right heart point out the coexistence of aortic insufficiency. The transformation of a single predominant strain of the right ventricle into partial left bundle-branch block (a transitional form between left bundle-branch block and preponderant strain of the right ventricle) coincides with the clinical improvement. The transformation is caused by an exaggerated increase of the potential of the right ventricle. The presence of preponderant strain of the left ventricle associated with mitral stenosis points out the coexistence of aortic insufficiency, aortitis, uremia, goitrigenous mitral pseudostenosis or some other similar lesions. The rhythmic disturbances most frequently observed in mitral stenosis are simple sinus arrhythmia of a vagal origin, respiratory arrhythmia, simple sinus tachycardia, auricular extrasystole, auricular paroxysmal tachycardia, auricular fibrillation with flutter and ventricular extrasystole. All the rhythmic disturbances mentioned, with the sole exception of ventricular extrasystole, are manifestations of either sino-auricular or auricular increased excitability caused by myocardial lesions located in the auricular walls.

Serologic Reactions for Diagnosis of Syphilis.—Ducco subjected the blood serum of normal and syphilitic persons to some experiments related with the flocculation test for the serodiagnosis of syphilis. He concludes that the blood serum of syphilitic persons contains an albumin or albuminoid which does not exist in the blood serum of normal persons. The syphilitic albumin produces a lecithin-albuminoid which is precipitated itself, under certain circumstances. The isoelectric hydrogen ion concentration (iso-electric point) of the syphilitic albumin is 7.9. Flocculation tests (and probably the Wassermann test also) aim to detect the presence of this albuminoid in the serum under examination. The nearest to 7.9 the hydrogen ion concentration of the medium (antigen emulsion) by means of which the determination of the syphilitic albumin is made, the most sensitive the method and the most exact the results obtained. The author advises the use of the following antigen and technic: As normal antigen the following should be used: chemically pure lecithin, 0.5 Gm.; cholesterol, 0.7 Gm.; alcohol, 100 cc. The emulsion of the antigen is made up with four volumes of distilled water and one volume of the antigen. The water is poured into an Erlenmeyer flask and the antigen is added drop by drop while the flask is continuously shaken. A normal solution of sodium citrate is prepared separately, thus: pure citric acid, 70 Gm.; distilled water, 500 cc., and ten drops of a 1 per cent alcoholic solution of phenolphthalein. This is dissolved and to it is added some concentrated solution of sodium hydroxide, in sufficient amount to bring the solution to the initial point of coloration with the phenolphthalein. As it is indispensable that the solution has a hydrogen ion concentration not beyond 8.5, as soon as the initial point of coloration with the phenolphthalein appears one should add a weak solution of citric acid, drop by drop, until the red hue of the phenolphthalein is slightly perceptible. The solution is allowed to cool and distilled water is added to make a volume of 1,000 cc. To this solution is added 1 or 2 cc. of chloroform to avoid any possible contamination by molds or bacteria. The following amounts are necessary to perform the test: blood serum, 1 cc.; suspension of the antigen at one-fifth concentration, 1 cc.; normal solution of sodium citrate, 1 cc. The mixture is kept at 37 C. and turbidity is observed in the liquid (in which flocculation has taken place) in a photometer or in a spectrophotometer. One subtracts from the reading of the density obtained the density of a control test made with the same technic as that used in the test, but by using distilled water in place of the antigen emulsion. By this technic a reaction of flocculation with tendency to conglomeration is obtained. Between the optic density obtained by this test (which density was estimated with Crova's polarization spectrophotometer) and the Wassermann test (which was performed according to the technic of Bauer and Hoecht, with inactivated serum and normal antigen at a concentration of 9 to 1), the following correlation in the results was observed: From 0 to 0.10 in the scale of the optic density, no Wassermann reaction was observed; from 0.10 to 0.20, one fourth in the intensity of the Wassermann reaction; from 0.20 to 0.30, one half intensity; from 0.30 to 0.45, three fourths, and more than 0.45, entire intensity of the Wassermann reaction.

Archiv für Hygiene und Bakteriologie, Munich

107: 243-396 (Feb. and March) 1932

English Sweat and Sudamina in Russia. H. Zeiss.—p. 243.
*Relations Between Carbohydrate Metabolism and Experimental Staphylococcus Infection in Rabbits. H. C. Fetzer.—p. 255.
Influence of Emulsification of Disinfectant on Bactericidal Action. W. Rimpau, E. Plochmann and G. Schneider.—p. 268.
Necessity of Bacteriologic Control of Employees in Water Works. K. Herzberg.—p. 277.
*Metabolic Changes During Chronic Carbon Monoxide Inhalation. H. Reploh.—p. 283.
Influence of Cultivation Temperature on Morphology and Rapidity of Growth of Bacterium Coli. A. Seiser.—p. 290.
Determination of Pathogenicity of Streptococci Strains of Infected Cow's Milk for Human Beings. J. Hökl, G. Petrov and A. Krejči.—p. 309.
Experimental Studies on Chronic Carbon Monoxide Poisoning. W. Boedicker.—p. 318.
Bactericidal Constituents of Bacillus Pyocyaneus and Bacillus Prodigiosus. H. O. Hettche.—p. 337.
Electrical Conduction Capacity an Aid for Chemical and Hygienic Evaluation of Milk. A. Schweers.—p. 354.

Relations Between Carbohydrate Metabolism and Experimental Staphylococcus Infection in Rabbits.—Fetzer administered to rabbits for twelve days, twice daily, 10 Gm. of dextrose by means of the stomach tube. On the fifth day of the experiment these animals as well as several control animals were infected with a culture of hemolytic, yellow staphylococci. It was the author's object to determine (1) what influence the alimentary hyperglycemia exerts on the spreading of a staphylococcus infection, and (2) the behavior of the glycogen content of the liver under the influence of the alimentary hyperglycemia and of the staphylococcus infection. On investigating the first problem he found that, whereas the control animals showed only a comparatively slight infection, in the animals that received the dextrose the infection was much more extensive. The author thinks that this is due to the increased sugar content of blood and tissues, which favors the growth and the spread of the staphylococci. To another group of animals a larger dose of infectious material was administered. To this severe infection the dextrose animals showed a greater resistance, for they survived, whereas the control animals died less than twelve hours following the infection. In order to determine the behavior of the glycogen content of the liver, a new group of animals was infected with staphylococci. It was found that in the animals that had been treated with dextrose the glycogen content was reduced to about one fourth of the normal, whereas in the controls it was reduced to one tenth. This shows that the toxins of the staphylococci reduce the glycogen content of the liver. The author thinks that the increased resistance of the dextrose animals against the toxins of the staphylococci may perhaps be due to their greater glycogen reserves, and he suggests that this may explain the good results obtained in toxic and infectious complications following administration of dextrose.

Metabolic Changes During Chronic Carbon Monoxide Inhalation.—Reploh made metabolic studies on rabbits that from six to twelve months were exposed daily to small quantities of carbon monoxide. In comparison with normal animals, the animals that had been exposed to carbon monoxide showed a considerably increased oxygen consumption, a slightly increased carbon dioxide elimination and a decreased respiratory quotient. Because the author's observations were similar to those made by Peisachowitsch, who investigated the changes in the incretory glands during carbon monoxide poisoning, he concludes that the metabolic changes are the result of changes in the incretory glands. Peisachowitsch noted changes particularly in the chromaffin tissues, in the suprarenal medulla and in the thyroid. The clinical value of his studies the author sees in the possibility to confirm the diagnosis of disorders caused by chronic carbon monoxide inhalation, by means of metabolic tests, and he thinks that such conditions may perhaps be treated by influencing the incretory glands.

Beih. z. Arch. f. Schiffs- u. Tropen-Hygiene, Leipzig

36: 1-36 (No. 2) 1932

*Relations Between Frambesia and Syphilis. O. Schöbl and C. M. Hasselmann.—p. 5.

Relations Between Frambesia and Syphilis.—Schöbl and Hasselmann consider the study of frambesia and of the interrelation between frambesia and syphilis of great significance because Spirochaeta pertenuis, the pathogenic organism of frambesia, is identical with Spirochaeta pallida, the pathogenic organism of syphilis, in regard to morphology, staining and culture. The main difference between the two types of spirochetes is in their biologic behavior in the body tissues. The pathogenic organism of frambesia is ectodermotropic; that is, it has an especial affinity for the external layers of the skin. The pathogenic organism of syphilis, however, affects all organs, but it shows a particular affinity for the mesodermal tissues and therefore can be considered as mesodermotropic. This difference in tropism explains the differences in the pathologic changes and immunizing behavior, and thus also the differences in the clinical course and in the epidemiology of the two diseases, as well as the fact that one disease attacks primarily certain age groups, and, finally, hereditary and congenital infections in syphilis and their absence in frambesia. The largest portion of the treatise consists of a report on studies of the immunity conditions. In it is discussed the relations between serologic changes and immunity, homologous and heterologous immunity, a new method for testing immunity to spirochetes and its advantages in studies on frambesia and syphilis, the duration of immunity, the influence of chemotherapy on immunity, and the biologic cure. It is emphasized that frambesia should not be designated as tropical syphilis, and it is also pointed out that the two diseases may concur. The possibility is considered whether perhaps the use of vaccines may be an aid to chemotherapy and may perhaps increase the immunity in those who have been treated during the early stages, and thus prevent reinfection.

Beiträge zur Klinik der Tuberkulose, Berlin

79: 665-786 (April 21) 1932

Increase in Virulence of Calmette Bacillus. H. Much and A. Haim. —p. 665.

*Morphologic Modifiability of Tubercle Bacillus in Culture. P. Kallós. —p. 688.

*Significance of Hematogenic Dissemination for Tuberculosis of Upper Portion of Lung in Children and in Young Persons. H. Starcke.—p. 691.

Etiologic Diagnosis of Pulmonary Tuberculosis During Childhood. G. W. Schmidt.—p. 713.

*Diagnosis of Open Pulmonary Tuberculosis in Nurslings and Children. T. Baumann.—p. 717.

Possibility of Cure in Miliary Tuberculosis. K. Schlapper.—p. 724.

Tuberculous Spondylitis: Observations on Cases Observed from 1912 to 1930. M. Reinhart.—p. 745.

Pulmonary Tuberculosis and Syphilis. H. Schlesinger.—p. 750.

Welfare Work for Tuberculous Patients and Decrease in Tuberculosis Mortality. H. Reploh.—p. 761.

Simultaneous Occurrence of Tuberculosis and Pernicious Anemia. E. Karlmark and T. Olovson.—p. 772.

Technical Improvements in Production of Oleothorax and in Irrigation of Pleura. G. F. Bume.—p. 782.

Morphologic Modifiability of Tubercle Bacillus.—Kallós shows that a changed culture medium is capable of modifying the morphologic characteristics of the tubercle bacillus considerably. When oil was used in the culture medium he noted in the oil layer numerous peculiar forms; namely, unusually long, threadlike, acid-fast and alcohol-fast bacilli. Of 100 bacilli in the oil layer, 58 were longer than the average length that was noted in the cultures before oil was used. These unusually long bacilli were either straight or curved and showed an intense, partly homogeneous and partly granular coloration. The oil culture also contained numerous delicate, granular and some terminally branched bacilli. Gram staining revealed the described forms to be gram positive, but some showed gram-negative granulation or deposits. The author also noted some free, gram-negative granules, some of which appeared in chain-like arrangements. The bacilli that were found in the funnel-shaped downward projections from the top layer and also those found in the bottom sediment were morphologically normal. However, some of them showed marked granulation. Tests of the virulence on guinea-pigs revealed that the bacilli in the oil layer as well as those in the downward projections and in the deeper portions of the culture were fully virulent.

Hematogenic Dissemination of Tuberculosis.—Starcke is convinced that hematogenic dissemination is the main form in which tuberculosis spreads among children and young persons, for he observed it in 50.5 per cent of the cases. In over 40 per cent he noted apical foci. He does not think that hematogenic early apical foci justify a more favorable prognosis than late apical foci. They are sometimes impossible to differentiate, and tuberculosis can spread from either of them to other parts of the lung, particularly when open caverns are present. Open caverns at the apex are not as rare as is commonly assumed. More significant than the differentiation between early and late hematogenic apical caverns is the differentiation between active and inactive disseminating foci. Early and late disseminations are prognostically equivalent, for even old, inactive apical foci may be the cause of further dissemination of pulmonary tuberculosis. Disseminations that are limited to the upper field have a doubtful prognosis, and pneumothorax treatment should therefore not be postponed. Phrenic exeresis does not prevent the formation of open cavities.

Diagnosis of Open Pulmonary Tuberculosis in Children.—Baumann emphasizes that the negative outcome of the direct examination of the sputum or of the feces either in smears or in antiformin preparations is not sufficient to exclude an open tuberculosis. He observed that the majority of cases of open tuberculosis (79 per cent of his material) can be detected only by the animal experiment. He is convinced that even those children in whom the tubercle bacilli are demonstrable only in the animal experiment are a menace to their surroundings. Accordingly he advises that, before a tuberculous child is discharged from the hospital or sanatorium, several animal experiments should be made.

Deutsche Zeitschrift für Chirurgie, Berlin

235: 681-825 (April 26) 1932

*Studies on Postoperative Shock. W. Ewig and L. Klotz.—p. 681.
Erysipeloid: Observations During Twenty-Five Years. E. Pawlowski.—p. 711.
Changes in Lung Following Closure of Branches of Pulmonary Artery by Embolus and Ligation. C. M. van Allen, G. B. Nicoll and W. M. Tuttle.—p. 724.
*Experiences with Paraffin Filling in Pulmonary Tuberculosis. A. Winternitz.—p. 752.
Mural Thrombus of Aorta as Cause of Multiple Arterial Embolisms of Greater Circulation. M. Marcus.—p. 766.
Thrombosis of Right External Iliac Artery with Embolism of Femoral Artery Following Appendectomy. M. Siebner.—p. 770.
Management of Cystic Duct in Subserous Cholecystectomy Without Drainage: Technic for Suturing of Dilated Stump of Cystic Duct. P. L. Mirizzi and F. A. Olmedo.—p. 775.
Actinomycosis of Stomach. L. Zukschwerdt and T. Eck.—p. 782.
When Is Resection of Duodenal Ulcer an Operation of Choice? A. Plenk.—p. 785.
Gastroscopic Observations. P. N. Napalkow.—p. 789.
Clinical Aspects and Pathogenesis of Torsion of Omentum. A. Henrichsen.—p. 794.
Clinical Aspects of Hematogenic Tuberculosis of Muscles. H. Hanke.—p. 801.
Casuistics of Patella Cubiti. I. Odessky and L. Melnikowa.—p. 807.
Aspects of Oligodynamic Action of Metals. W. M. Kreiner.—p. 809.
Treatment of Tetanus with "Avertin." G. Loewe.—p. 814.

Studies on Postoperative Shock.—Ewig and Klotz differentiate two types of postoperative shock, a compensated and a decompensated form. The compensated form, besides having the typical general aspects, is also characterized by a greater or lesser increase in the quantity of the circulating blood, by a constant or increased venous pressure while the veins are well filled, by unchanged or slightly increased arterial pressure, and by only slightly accelerated heart action. Signs of vascular insufficiency are absent. The further postoperative course is favorable. If other complications are absent, therapeutic interventions are unnecessary. Decompensated postoperative shock resembles the clinical aspects of collapse with reduction of the circulating quantity of blood, reduction in arterial and venous pressure, emptiness of veins, and considerable acceleration of the pulse. In the treatment of this form of postoperative shock, inhalation of carbon dioxide and intravenous continuous drop infusion of a dextrose solution are most effective. Neither the extent of the intervention nor the type of anesthesia can be considered as alone responsible for the development of compensated or decompensated postoperative shock. Contrary to their expectations, the authors observed compensated shock especially often following serious interventions on the stomach in ether anesthesia. Whereas the postoperative increase in the circulating blood is primarily due to evacuation of the depots, the reduction of the quantity of the circulating blood is only partially due to the stasis of larger quantities of blood in the splanchnic region or to filling of the depots, for it is partly due to loss of plasma. Of the anesthetics, "avertin" has the most unfavorable effect on the peripheral circulation. When "avertin" is used there is always immediately after the operation a more or less decompensated shock.

Experiences with Paraffin Filling in Pulmonary Tuberculosis. — Winternitz reviews his experiences with paraffin filling of the lung. Because his time of observation is comparatively short, he does not consider his results as final. After-examination of seventy-nine patients showed 32 per cent to be free from bacilli and able to work. The author thinks that in spite of its disadvantages the paraffin filling should not be entirely abandoned, but he demands that its use be limited to cases that are suitable in every respect. It should be employed only in apical caverns that are not lower than the infraclavicular region, and the remaining portions of the lung should be unimpaired. The filling should not be in excess of from 300 to 500 cc. The paraffin filling can be resorted to also in caverns that remain after thoracoplasty and in bilateral apical caverns, provided the lower parts of the lung are unimpaired. The author considers it a matter of course to resort to paraffin filling only after pneumothorax and phrenicotomy have been unsuccessful. He is convinced that if paraffin filling is resorted to within these strictly defined limits, it will give good results and will no longer deserve an unfavorable reputation. He thinks that efforts should be made to replace paraffin by a more suitable material.

Klinische Wochenschrift, Berlin

11: 753-792 (April 30) 1932. Partial Index

Development and Present Status of Research on Yellow Fever. W. Schuffner.—p. 753.
Formation of Urea in Animal Organism. H. A. Krebs and K. Henseleit.—p. 757.
Bromine Content of Hypophysis and Its Relation to Age. H. Zondek and A. Bier.—p. 759.
Hypophysis and Sleep. H. Zondek and A. Bier.—p. 760.
*Mineral and Lipoid Constituents of Blood Serum in Essential Hypertension. L. Wacker and C. Fahrig.—p. 762.
Experimental Investigations on Intestinal Autointoxication. W. Tönnis and H. Horster.—p. 766.
Elastometric Investigations on Athletes. A. Arnold and H. Wunderlich.—p. 768.
Intragastric Electrochemical Registration of Fluctuations of Gastric Acidity. L. Dinkin and H. Taterka.—p. 770.
Practical Value of Fractional Method for Study of Mechanism of Gastric Function. O. J. Vándorfy.—p. 772.
Registration of Acidity Fluctuations in Stomach by Electrochemical Method Without Withdrawal. C. Funck.—p. 773.
New Method for Serologic Demonstration of Cancer Antibodies in Cancer Patients. H. Lehmann-Facius.—p. 775.
Do Sex Hormones Act Directly on Secondary Sex Organs or Only by Way of *Hypophysis?* J. Freud.—p. 776.
*Raw Cotton as Cause of Bronchial Asthma. J. Herms.—p. 777.

Mineral and Lipoid Constituents of Blood Serum.—In twelve patients with essential hypertension and in nineteen healthy persons, Wacker and Fahrig studied the content of the blood serum in sodium, potassium, calcium, magnesium, chlorine, rhodan and the composition of the lipoid complex. It was found that when the physiologic reduction of the calcium content in older persons is taken into consideration, the calcium content is not reduced during essential hypertension, and the potassium content is not increased. Moreover, the quantitative determination of the calcium content gives no indications about the quantity of the ionized portion of calcium. The magnesium content of the serum of patients with hypertension is somewhat increased; however, the chlorine content is not increased. The sodium and rhodan contents are not changed during hypertension; in smokers the rhodan content was somewhat increased. The total cholesterol content of the blood serum was increased in 75 per cent of the patients with essential hypertension. But in spite of the frequent concurrence of hypercholesteremia and essential hypertension, the increase in the cholesterol content cannot be considered as the immediate cause of increased blood pressure. Hypercholesteremia is only a partial manifestation of hyperlipoidemia. The lipoid complex is made up primarily of phosphatides (computed as lecithin), cholesterol esters, neutral fat and free cholesterol. If the tests are made during rest and while the patients are fasting, the neutral fat does not take the first but third place, and it amounts to less than one fourth of the total lipoid content. The increase in the various portions of the lipoid complex during essential hypertension is such that the physiologic ratio is preserved.

Raw Cotton as Cause of Bronchial Asthma.—Herms relates the clinical history of a man, aged 38, whose occupation necessitated the testing of samples of raw cotton. For more than eight years he had had respiratory disturbances such as coughing and shortness of breath whenever he came in contact with cotton from Peru. During the last six months asthma-like attacks developed, even when he was away from his work, but when testing cotton from Peru the disturbance became almost unbearable. The anamnesis revealed that the patient's mother had suffered from asthmatic attacks after eating fruits. The skin allergy of the patient was tested with extracts of various types of cotton. The test with cotton from Peru gave a strongly positive reaction, whereas tests with other types of cotton gave much weaker reactions, and control tests with physiologic solution of sodium chloride and with a peptone solution were negative. The patient was subjected to an antiallergic therapy by subcutaneous injections of extract from Peru cotton. After the treatment was completed, contact with the Peru cotton no longer caused asthmatic symptoms and the patient's general condition was likewise improved. Following this report of the case history, the author discusses on the basis of this case the principal postulates for the diagnosis of allergic bronchial asthma. He also shows that similar disorders of the respiratory organs in cotton workers usually prove on closer investigation to be not an allergic disease but probably of parasitic origin.

Zentralblatt für Gynäkologie, Leipzig

56: 1137-1200 (May 7) 1932

Real Significance of Menopause on Background of Life. H. Sellheim.—p. 1138.
Report on Cancer Inquiry in Rhenish-Westphalian Society for Gynecology and Obstetrics. K. Frankenstein.—p. 1143.
*New Theory on Development of Endometrioid Heterotopias. E. Tonkes.—p. 1151.
Skin as Hormone Carrier in Pregnancy. A. Loeser.—p. 1155.
*Therapy of Essential Thrombopenia. W. Schaefer.—p. 1158.
Antique and Modern Obstetrics and Gynecology in India. S. Mitra.—p. 1166.
Application of Fritsch's Fundal Section in Cesarean Operations. R. Spoerl.—p. 1178.

Development of Endometrioid Heterotopias.—Tonkes agrees with De Snoo, who, convinced that the sero-epithelial theory was not a satisfactory explanation, expressed the opinion that endometrioses develop from tissues that during the embryonal period are close to the site of Müller's ducts. The author made microscopic studies in cases of endometriosis and found that these proliferations resemble endometrium physiologically as well as morphologically. In many of the ectopic endometrial proliferations the lymph nodes as well as the stroma showed changes that are known to occur in the uterine mucous membrane, and which are considered as physiologic menstrual changes. The author also cites clinical observations that corroborate this theory of the endometrioid heterotopias. After evaluating various theories of pathogenesis and showing their shortcomings, he discusses his own theory. He thinks that endometrioses develop from tissues which during the embryonal stage develop into the genital system, and which persist in the undifferentiated stage into later life and under the influence of especial impulses they may yet become differentiated into endometrium.

Therapy of Essential Thrombopenia.—Schaefer evaluates three therapeutic procedures that have been recommended for the treatment of essential thrombopenia; namely, blood transfusion, extirpation of the spleen and irradiation of the spleen. Since extirpation of the spleen involves the danger of a fatal outcome and also because it occasionally does not have the desired effect, the author thinks that removal of the spleen is advisable only if all other measures, particularly blood transfusion and roentgen irradiation of the spleen, have failed. He illustrates this by a case report and shows that irradiation of the spleen with large doses can replace splenectomy.

Laboratornaya Praktika, Moscow

8: 1-40, 1932. Partial Index

*Culture Medium from Soy Bean. D. S. Kostriko and Ts. Kh. Maryash.—p. 10.
*Soy Bean Medium for Bacterial Counts. A. Zaslavskiy and E. Berger.—p. 11.
*Weil-Felix Reaction in Normal Individuals and in Patients with Typhus Fever. I. I. Kamenetskiy, P. F. Donovskaya and A. A. Konstantinova.—p. 12.

Culture Medium from Soy Bean.—Kostriko and Maryash describe three modifications in the preparation of soy bean medium: 1. A soy bean extract is prepared by adding 100 Gm. of soy beans to 1 liter of water, boiling from thirty minutes to one hour, filtering, and sterilizing by autoclaving twenty minutes at 120 C. 2. Several soy beans (eight or ten) are added to a test tube with water and sterilized like the extract. 3. Soy bean agar is prepared by adding from 1.5 to 2 per cent agar to the extract and sterilizing. These mediums were found efficacious for the culture of most pathogenic bacteria, and the growth was better and faster on this medium compared with the ordinary culture mediums. Many milk-acidifying organisms not growing on the ordinary mediums were cultivated on the soy bean medium. It was found that the second medium was especially suitable for the cultivation of anaerobes without addition of other substances. Yeasts also grew on this medium. Although most strains of staphylococci and streptococci grew on this medium, further study was recommended. The chemical composition of the soy bean was found to consist of 34 per cent protein, 16.8 per cent fat, 33.7 per cent carbohydrates, 4.7 per cent ash and 10.8 per cent water. The authors conclude that soy bean broth and agar may be substituted for meat-peptone broth and agar in many cases; that unfiltered soy bean medium may serve for the cultivation and isolation of anaerobes, and that this medium may be used for microbiologic control in canning industries.

Soy Bean Medium for Bacterial Counts.—In their effort to find an easily obtainable and inexpensive culture medium, Zaslavskiy and Berger chose the soy bean medium recommended by Kostriko and Maryash. Various waters from the fields around Odessa were plated on soy bean agar (with proper reaction) and also on the usual meat-peptone agar and examined after forty-eight hours' incubation in the thermostat. The authors conclude that the soy bean medium is just as efficient and may be substituted for the meat-peptone mediums in water analysis of the bacteriologic laboratory. The preparation of this medium is much easier and on the whole less expensive.

Weil-Felix Reaction in Normal Individuals and in Patients with Typhus Fever.—Kamenetskiy and his co-workers state that the Weil-Felix reaction for typhus fever appears in a very small percentage of the patients at the onset of the disease before the exanthem; the number of positive reactions increases from the eighth to the ninth day and reaches 100 per cent at the termination of the disease and remains at a high titer in many patients afterward. These facts must be recognized during the time of epidemics when it is so necessary to isolate persons with early forms of the disease. No real significance can be attributed to a reaction with a titer of less than 1 to 200. The Weil-Felix reaction was negative in 100 school children whereas 178 adults, who reported never having had typhus fever, had slight reactions in 3 per cent of the cases. Among 150 patients with clinical typhus fever, only eight had Weil-Felix reactions with a titer of 1 to 200; the rest had much higher titers (1:400 to 1:3,200). The authors suggest that whenever examinations are negative, especially when the blood was drawn before the seventh or eighth day of the disease, the Weil-Felix reaction should again be examined in two or three days. In 134 clinical cases of typhoid, the Weil-Felix reaction was positive in 2 per cent; while in a group of 150 patients with typhus fever, the Widal reaction was positive in titers of from 1 to 100 to 1 to 400 in 22 per cent and in a titer of 1 to 1,600 in 2 per cent of the patients. The Widal reaction was examined with Bacillus typhosus, Bacillus paratyphosus A and B and N_2; the Weil-Felix reaction was never examined with less than two strains of Bacillus proteus X 19 (in some with four strains).

Bibliotek for Læger, Copenhagen

124: 115-153 (April) 1932

*Blood Sugar Threshold in Diabetic Persons. K. Faber and J. E. Holst.—p. 115.
Height of Rise of Blood Sugar After Administration of Dextrose in Diabetes Mellitus and in Nondiabetic Persons. J. E. Holst.—p. 135.

Blood Sugar Threshold in Diabetic Persons.—Faber and Holst emphasize the importance of knowledge of the blood sugar threshold for the evaluation of glycosuria both in diabetic and in nondiabetic persons. They show that while the blood sugar threshold differs in different persons it continues unchanged in the same person, whether normal or diabetic, although it may be affected by certain conditions such as gravidity.

Ugeskrift for Læger, Copenhagen

94: 429-458 (April 28) 1932

Ambulant Neurologic Therapy. P. Levison.—p. 429.
Invalidity After Severing of Tendons of Hand. S. Klær.—p. 432.
*Leukemia in Denmark. H. C. Gram and R. Nielsen.—p. 437.
Prevention of Gonorrhea. K. Philipsen.—p. 443.

Leukemia in Denmark.—Gram and Nielsen find that the annual mortality from leukemia in Denmark is 18 per million of population. It is somewhat lower in rural (16) than in urban districts (20). The authors conclude that the disease seems to affect the working class somewhat more than other classes.

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THE INTERRELATIONSHIP OF MOTHER AND FETUS

CHAIRMAN'S ADDRESS

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The relations of mother and fetus are so intimate that it may appear entirely unnecessary to discuss their interrelationships, and yet the effect of the one on the other constitutes the fundamentals of obstetrics. The intertwining relations are so manifold, involving the physical, the mental, the psychologic, the social, and many other aspects of human life, that it would be difficult to discuss them all. Much might be said concerning the psychologic effect of no children, of abortions, of dead-born, of malformed or defective children and of too many children on the mother. It is not my intention to discuss these problems. It might be well to mention that a population equilibrium requires between three and four children in a family. Such an even distribution is not possible, since some couples will have more and others less. Arguments for the spacing of children have been advanced, and a reasonable interval between childbirths is without doubt beneficial to the mother but probably not so material for the infant. It is probable that selective limitation of the size of families is of greater importance than an attempt at accurate spacing of pregnancies.

The program of this section has been directed largely to a consideration of some fundamental obstetric problems and has been aimed at giving some systematic idea of what constitutes adequate consecutive antenatal, natal and postnatal care. This can be furnished only when one has some understanding of the interrelationships that exist between the mother and the fetus.

The exact relative importance of heredity and environment is not known. It is quite certain, however, that heredity is an extremely important factor in certain conditions. The whole field of eugenics is based on heredity. The potency of these forces in the vegetable kingdom and among the lower animals is recognized, so why attempt to palliate or deny the potency of such laws in the human race?

The first interrelationship arises in the genes of the parents, and we are particularly interested in those of the mother, though the paternal chromosomes may carry equally potent forces. The mother marks her infant, not with the fanciful imagery of birthmarks, but with the ancestral tendencies. Some of these tendencies should be encouraged and others should be suppressed for the good of all concerned. The continuation of a harmful interrelationship with the progressive increase of highly undesirable defects from generation to generation should be arrested. This tendency must be controlled in the process of our racial development by compulsion in some instances and by enlightenment in others. We, as physicians, must recognize and also lead in programs for human betterment by some control of hereditary factors. We recognize individual variations between parents whose individual dominant and recessive characters might lead to the transmission of the characteristics of one parent or the other to the infant. Nevertheless, on the whole, one parent would probably transmit as many hereditary influences to the offspring as the other.

The next item of importance is the production of normal, healthy ova and sperm cells. Environment can affect only the germ cell itself in the father. In the mother not only the germ cell is affected by its surroundings, but the ovum, from the very moment of its fertilization, is subject not alone to such influences, but is also absolutely dependent on the maternal environment for its existence. We know that many ova fail to be fertilized, and that multitudes of spermatozoa fail to reach their goal. This is, of course, fortunate in a seemingly crowded world. The important fact is that many fertilized ova develop improperly because they are intrinsically defective or because of unfavorable environment. Pathologic embryos develop and are lost in early abortions. Others survive and lead to the formation of monsters which die before, during or soon after, birth. Others survive for varying periods of time to plague their parents and burden society. What influences work on the germ cells to produce such perversions of development? The defect may lie in the ovum or, possibly, in the sperm, or the fertilized ovum may be subjected to some maternal influence that leads to this abnormal development. The pairing of germ cells with defective chromosomes leads to maldevelopment of parts or of almost the entire embryo. It is not known what hereditary or environmental influences produce these imperfect germ cells.

We know that certain toxins will destroy germ cells. In all probability, they are subject to injurious influences which may not destroy their potency but which lead to subtle changes. Infertility may apparently result from physical and mental exhaustion. Why not imagine some damage to these cells which is short of infertility? As an example, perverted and subnormal thyroid activity may lead to infertility. Why not recognize some intermediate damage to procreative cells or environment?

The ovum is fertilized, and through some vagaries of nature becomes implanted in the uterine tube, which

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almost invariably leads to its own destruction and causes serious danger and sometimes death of the mother. The causation may be some antecedent developmental or acquired genital condition of the mother.

The ovum passes into the uterus and becomes embedded in the prepared decidua, where it develops into the embryo through progressive stages of cell division. It carries little nutriment within itself, and almost from the moment of fertilization it is dependent on extraneous maternal fluids and tissues for its sustenance.

The ovum and embryo is an invader, and usually, though not always, can be regarded as a beneficent parasite. Maternal reactions are excited, and definite tissue reactions develop, either from the stimulus of the embryo itself or from some hormone of remote origin. The potency of such hormones is seen by the marked reactions observed in animals following the injections of relatively small amounts of urine from women in early pregnancy. The prepared decidua is invaded, penetrated and stimulated by the ovum, which burrows its way deep into the maternal decidua, where it lies close to its food supply and as remote as possible from more external influences within the uterine cavity. The yolk sac and its vitelline circulation appear and disappear and are replaced by that of the chorion, which later becomes transformed into the placental circulation. Preceding the formation of the chorionic villi, the invasive fetal epithelium passes into the maternal tissues even beyond the decidua. The myometrium is invaded by these syncytial cells, which are often deported to the lungs and other portions of the body, where they are usually destroyed by some defensive maternal mechanism. This delicately balanced order is at times disturbed so that these cells gain the ascendency, sometimes with replacement of the fetus and its structures by a hydatidiform mole and sometimes without such replacement. A malignant condition may develop from this chorionic epithelium, with localized tumor formation. Chorionic cells are scattered in the maternal organs, often with disastrous results. Sometimes the removal of the original tumor results in the disappearance of these remote cells and of the peculiar hormone from the serum and urine. Some defensive maternal mechanism may destroy these tumor cells probably in the same manner as it obliterates the deported chorionic epithelium of pregnancy.

These morphologic changes are demonstrable with the microscope, but no such instrument reveals many more subtle alterations that are taking place. These are psychologic variations, which produce diverse reactions. Women frequently desire a termination of the pregnancy early, and later are most happy that the pregnancy was continued to a successful conclusion. There is not infrequently depression and even a psychosis which later disappears completely. The metabolic changes are not well understood, but are none the less definite. The disturbed functions leading to some of the so-called symptoms of pregnancy are hard to explain, except on the basis of perversion of some endocrine or metabolic function due to the absorption of some products arising from the fetus or its adjuncts. It is hard to comprehend the severe toxic conditions that occur in early pregnancy with marked gastro-intestinal symptoms, disorders of the nervous system, hemorrhages, etc., on any other supposition. Death is sufficient evidence of the reality of these conditions, and recovery from such intoxications, following the emptying of the uterus, is sometimes striking. It often happens that even in severe toxemia of this type, the course of the pregnancy and the normal development of the fetus seem to be uninterrupted.

THE CRITICAL EARLY PERIOD OF PREGNANCY

The early weeks and months of pregnancy are critical for both fetus and mother. The destiny of the former is commonly determined during this period, and the latter has to make real adjustments, not alone of a physical, but of a psychologic, character. The nutrition of the prospective mother often suffers during this period, not because of excessive demands by the fetus but on account of the disturbed digestive functions and altered metabolism and, occasionally, from toxic effects. The nutritive demands of the fetus during the early months are not great, as it needs relatively little proteins, minerals, etc. One cannot be so certain of the vitamin requirements, though vitamin E, which is fortunately widely distributed, can be regarded as essential to the life of the embryo.

It would be difficult to conceive of the probability that the fetal demands for nutrition could, in this early period, be responsible in any way for the symptoms of pregnancy and the marked metabolic changes in tissues and organs which are initiated in the maternal organism at this time.

In the early weeks and months the fetus consists largely of water and albuminoid material. Later, salts and fats are added as the placental circulation becomes established and the percentage requirement for component nitrogenous substances increases. For normal embryonic and fetal growth, one has to presuppose an endometrium free from previous inflammatory or deleterious disease and with a normal decidual response to hormonal stimulus. Such a decidual formation is vital in the early days and weeks, as there is probably no other means of transmission of nutritive substances from mother to fetus than osmosis, though one could not state that the trophoblastic cells have no selective action in absorbing substances from the maternal cells and fluids around them. The chorionic epithelium is formed and may play some nutritive rôle even before the cells serve as a means of communication between the maternal sinuses, which are filled with blood or lymphoid fluid, and the vascular tufts of the chorionic villi, filled with fetal blood.

For the proper performance and establishment of these morphologic and physiologic relations, it is essential that proper implantation occur. Otherwise chorionic and placental degenerations and accidents could occur which would lead to abortion, fetal death or malformation, immature fetus and, possibly, to placental separation or accretion, with danger to the mother.

It is likely that many of these variations from the normal are due as much to factors which are intrinsic in the ovum as to those which are extrinsic. It is definitely possible not only that the whole ovum may be defective, but also that parts of it may be and lead to varying degrees of imperfect development of tissues and organs.

Whatever the causes that control the implantation and development of the embryo and fetus may be, it is evident that it is just as important for the fetus to have proper relations established between the so-called fetal and maternal placentas as it is for the newly born infant to have a properly functioning gastro-intestinal tract.

The placenta serves both as a gateway and a barrier between the mother and the fetus. It is opened for the substances which the fetus needs from the constant stream of maternal fluids and closed to those which are unnecessary and deleterious, though the barrier is sometimes broken down for harmful materials.

The substances necessary for fetal growth seem to be much the same as those for postnatal life. The proteins, fats, carbohydrates, minerals, vitamins and water are essential substances for the fetus and must be supplied by the maternal organism. While the placenta acts as an osmotic membrane for some substances, it has functions of selection and storage and acts as a defense mechanism as well. The caloric requirements must be met, and the placenta appropriates the necessary proteins, fats and carbohydrates, even to the detriment of the mother.

Water is usually easily available, but the minerals may be deficient; nevertheless, the fetus appropriates these substances to provide for its skeletal and other tissue development. The mother may suffer, as the result of this demand, from some mineral deficiency. The minimal and proportional fetal requirements must be met. The storage of phosphorus, iron and calcium may suffer, with the result that postnatal rachitis can easily develop. Iodine may be deficient, with resultant thyroid changes. Vitamins are essential for the fetus. Reserve of minerals and, possibly, of some vitamins can be built up in the fetus through adequate maternal diet.

It seems possible to influence the metabolism and prevent maternal damage by a proper diet, so that the mother may be protected from mineral and vitamin deficiency, and the fetus may be delivered better able to cope with extra-uterine life. The growth and development of the fetus seems to be regulated by some hormonal action and not by the nutritive supply, as increase or diminution of proteins, fats and carbohydrates in the maternal diet seems to have little or no effect on the fetal size and weight.

The fetus follows certain laws of growth, largely uninfluenced by deficiency or excess of maternal food supply. The birth weight does not seem to be materially increased by abundant nutriment, nor is the reduction significant except in actual maternal deficiency diets.

HORMONES

The anterior pituitary of the mother hypertrophies during pregnancy, and some maternal cells and tissues show evidence of growth. It is probable that the placenta is permeable to hormones, and that the fetus is affected in its development by these hormones. There is also some indication that the mother may be affected by fetal hormones, which may be hypothecated in some cases of hypothyroidism. It would not be illogical to suppose that there is some reciprocal relationship between fetal and maternal hormones. It has been suggested that postnatal fetal lactation may be the result of maternal hormone stimulation. One of the best examples of the effect of deficient maternal hormone action is seen in congenital cretinism, in which the fetus suffers directly from the lack of thyroid secretion, from a myxedematous mother.

Hormones, which are formed in association with pregnancy, are doubtless responsible for the many changes that take place in the maternal organism. The alterations in the genitalia are most marked, and naturally have a direct relationship to the fetus. Some of these changes are of extreme importance to the mother, as they predispose to the development of abnormal conditions. The heart becomes somewhat dilated and perhaps hypertrophied, and there seems to be an increase in blood volume and minute volume as well. This increases the cardiac load, and if there is a lowered reserve it may lead to impaired function of this organ. There are important changes in the blood that affect the cellular elements, the gaseous interchange, the nitrogenous content, etc. These are important from the standpoint of their close relationship to pathologic conditions, such as anemias and toxemias. It is unnecessary to cite all the physiologic changes that carry the mother closer to the borderline of a pathologic condition, but one good illustration is found in the change in the urinary tract, which is shown by the lack of tonus in the upper part of the ureter with a tendency to dilatation which predisposes to retention and infection. Changes in the kidney and in the liver have led to such descriptive terms as the "kidney of pregnancy," the "liver of pregnancy," both of which designations imply a nearer approach to pathologic conditions.

There are marked changes in protein metabolism, with a tendency to nitrogen storage; sugar tolerance is decreased, and fat is stored. The fetus makes a vigorous call on the mother for minerals, the most important of which for mother and fetus are iron, calcium and phosphorus. The fetus demands not only enough for its immediate needs, but expects some for storage in order to meet the more rigorous demands of extra-uterine life.

PATHOLOGIC CONDITIONS

During pregnancy, certain pathologic states arise in the mother which are the direct result of the pregnancy and which may be regarded in a broad way as the effect of the fetus on the mother. Other conditions arise which are more or less accidental, but which complicate the pregnancy. In some of both of these types of conditions the mother is more seriously damaged, and in others the fetus bears the brunt of the disorder.

Physiologic changes in the gastro-intestinal tract occur, and often pathologic states result, with salivation and excessive vomiting, which produce profound metabolic disturbances and toxemia in the mother, which may result in her death. The fetus seldom succumbs, unless a therapeutic abortion is done or maternal death occurs. This type of case illustrates strikingly the parasitic action of the fetus, which continues to live and thrive to the point of destruction of its host.

Preeclamptic and eclamptic toxemia is another illustration of a condition, probably related to the one previously mentioned, which threatens the health and life of the mother without direct danger to the fetus. Indirectly, of course, the life of the fetus is in serious danger from premature labor, induced labor, placental changes, suffocation and trauma from complications of hurried or artificial labor.

The increased metabolic stress thrown on the mother by the growing fetus not infrequently uses up the reserve of organs that have been previously damaged and have diminished reserve powers. This is best illustrated by the course of events in patients who have damaged hearts, in which the greater amount of physical work entailed leads to exhaustion of the cardiac musculature. The mother suffers irretrievable damage and even death. The fetus may be born prematurely and suffer damage incident to labor, and in severe cases may suffer in utero from impaired gaseous interchange. A similar occurrence, but of a more chemical character, takes place when the kidney reserve is low. These organs are unable to carry the combined fetal and maternal load, and a crisis occurs, with definite and permanent damage to these organs and direct or indirect fetal injury.

Conditions of the mother of an infectious character may result in damage not only to her, but to the fetus. The placenta acts as a fetal defense organ, but sometimes these barriers are broken down and the fetus is infected. Apparently, there is great difference in the transmissibility of infections from mother to fetus. It is definitely known that certain acute infections can be transmitted through the placenta and affect the fetus. It is obvious that the organisms must be present in the maternal blood or lymph streams or exist in the uterus itself before it is possible for them to pass through the placenta. Doubtless the ability of organisms to invade and persist in the maternal blood is a factor of great importance. Some clinical experiences would lead one to believe that the importance of some streptococcic infections in relation to disease of the embryo and fetus is not yet fully realized. Apparently, the size of the infecting organism is not an important factor, as the spirochete passes through with ease unless there is some undiscovered precursor that may transmit syphilis.

Two infectious diseases stand out prominently in their relation to pregnancy. One is tuberculosis, which rarely infects the fetus in utero, and the other is syphilis, which is transmitted to the fetus so frequently that it constitutes one of the chief causes of intra-uterine fetal disease and death. It might be well to mention that syphilis is not now considered to be a great factor in the production of abortion, as the fetus is rarely seriously involved with disease until the latter half of pregnancy.

Another point worthy of consideration is that syphilis does not have to be active to be transmitted to the fetus. There is a tendency toward the belief that syphilis is much more a congenital than an hereditary condition. This point of view is important, as congenital syphilis is so readily treated through the mother. The placenta transmits and stores the arsenical preparations used in the treatment of this disease, and the fetus responds much better to intra-uterine treatment than to postnatal remedies. The syphilitic fetus seems to exert no influence on the course of this disease in the mother.

Tuberculosis is rarely seen in the fetus, but it is quite common in the exposed infant. While opinions differ somewhat, it seems to be generally agreed that pregnancy exerts a harmful influence on the tuberculous patient. It is quite universally accepted that the tuberculous woman should not become pregnant until the process is definitely healed. The opinion is now becoming well grounded that the patients are not treated most effectively by therapeutic abortion, but respond better to other accepted methods of treatment.

It should be stressed that there is a definite tendency to abortion, fetal death and premature labor in the presence of acute infections. Such diseases should be diagnosed early and carefully treated during pregnancy.

The hazards of infectious diseases for the mother, the fetus, or both, are not generally appreciated. Even mild attacks have a definite menace; when prophylactic measures are possible, they should be utilized, and when they are not, early recognition should lead to the prompt institution of rest and other indicated methods of treatment.

Except in cases in which the pregnancy terminates prematurely or the fetus dies in utero, it is impossible to estimate the amount of damage to the fetus unless it carries definitely recognizable evidence of the disease into its extra-uterine life. This postnatal evidence is often obvious in such diseases as syphilis and variola.

The transmission of immunity from mother to infant is an important question, and it has been thought that the development of racial immunity to certain epidemic diseases may be proof of the transmission of such an acquired immunity. There is apparently some transmission of immunity to the offspring, but whether it is active or passive has not been finally determined. It is probable that there is not only a transmission of immunity in utero, but also through the mother's milk.

Pregnancy is often complicated at its conclusion by an intentional or unintentional premature termination. It should be definitely understood that pregnancy is a physiologic and a cyclic condition, which may become pathologic through any factor that causes dysfunction or disturbs the cycle. Such a dysfunction or cyclic disturbance reacts unfavorably on both mother and fetus. A premature ending of the pregnancy is never physiologic for the mother and is most certainly pathologic for the fetus. Labors prior to the period of fetal viability obviously lead to fetal destruction. The process of premature parturition is often serious for the mother and frequently has sequelae that are damaging and dangerous. Premature labors after fetal viability are not necessarily fatal to the infants, but there is a high morbidity among the survivors, whose extra-uterine life is tremendously complicated. The latter part of pregnancy converts prematurity to maturity not only in an anatomic but also in a physiologic sense, which is more important because the adaptation from intra-uterine to extra-uterine life is much more a physiologic than an anatomic process.

OTHER CHANGES

Many maternal changes that occur during the latter part of pregnancy, especially those of the genitalia, are preparatory for labor and the puerperium. The proper timing of the onset of labor, with reference to the physiologic ending of pregnancy, is of the greatest importance for the maintenance of normal relations between mother and fetus.

The changes that take place during the latter part of pregnancy consist of retraction, thinning or softening of the lower uterine segment, cervix and vaginal tract. These changes are accompanied by the adaptation of the fetal presenting part to the pelvic inlet. These changes enable the tissues to resist trauma more effectively. During this period maternal fluids and migratory and possibly reticulo-endothelial cells localize and proliferate in this region and become potent factors in the defense mechanism of the mother against infection.

There is no normal labor except one which begins at the cyclic ending of pregnancy, in response to some stimulus probably of a hormonal character. The drug or mechanical induction of labor at any period of pregnancy must be regarded as pathologic and should be avoided except for strict indications dictated by the best interests of the mother and fetus. Some methods alter their relations less than others, and a minimum of disturbance should be secured for the safety of both.

The interrelations of the fetus and mother during labor are delicately balanced and intimate. The mechanics of labor, affecting as they do the two individuals, involve the dynamic and adynamic forces that accomplish the passage of the fetus through the birth canal. The fetus and the bony and ligamentous pelvis are passive in this mechanical process. The soft tissues with their elastic and neuromuscular tissues are the dynamic powers. Any variations from the maternal adynamic forces, such as an abnormal pelvis, or from the similar fetal forces, such as malposition, naturally produce abnormal mechanisms. This disturbs the normal interrelationship and may cause dire results for fetus, mother or both.

Disturbed dynamic powers, whether primary or secondary, are frequently associated with pathologic adynamic forces and serve to further complicate the picture. Any disturbances of the active forces during the first stage of labor are apt to be especially serious. These variations from normal may arise without extraneous influences, but intervention of various kinds produces much of the morbidity and mortality seen in mothers and infants. Injudicious use of anesthesia, of oxytocics and of operative procedures during the first stage causes marked disturbances of the normal relations, with resultant trauma, hemorrhage and infection in mother and infant. The second stage of labor admits of intervention with the probability of much less damage to mother and fetus. In some abnormal cases, less damage results to both from timely and appropriate intervention than would occur without it. Disturbed relations materially increase the dangers to mothers, who may become sick and die as the direct or indirect result of trauma and hemorrhage, both of which predispose to infection.

When factors lead to abnormal relations, fetal complications ensue which may cause a dead-birth or death in the neonatal period, usually as the result of injury or suffocation. Disturbances of respiration in the newly born infant should be regarded as a symptom, generally of some intracranial injury, which has been produced either by a short but violent labor, a prolonged but eventually spontaneous termination, or, lastly, but not infrequently, by an instrumental or a breech delivery or a version and extraction. Prematurity and immaturity of the infant with its greater fragility of tissues predispose to these injuries of the central nervous system and of other tissues and organs. Maternal injuries are obviously a frequent accompaniment of these fetal injuries, as the same factors tend to produce both.

The postnatal relations are not so intimate and vital for either the mother or the infant, as with the establishment of respiration the latter begins its extrauterine life, which can continue even though the mother succumbs, provided a maternal substitute is available. Protection from harmful external influences and the supplying of nutriment can be secured from other than maternal sources. These relations must be obtained and maintained by some means or other.

The death of the infant may leave behind a mother whose full function has been impaired and who has to make physical, psychic and other adjustments to life.

These losses, through disturbed interrelationships, have a definite and serious effect on family and community life. These relationships are affected by the heredity of the parents, by the growth and development of the potential mother, by the character of the germ cells, by the maternal environment throughout pregnancy, by the critical period of parturition and, to a lesser degree, during the postpartum and postnatal periods.

ABERRATIONS OF EYES AND LENSES

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Defects of refraction in the eye and in lenses have been named from the points of view of those who first observed them. There were spherical convex lenses two thousand years ago, called "burning glasses" because of their use to light fires. The 4 D. convex lens of rock crystal, found by Layard in the ruins of Nineveh, may have been called a "sight saver" by the man who made it, when he found that it lengthened his years of useful work. The Greeks, who studied and watched the symmetry of the face, naturally called myopia the near-sightedness they tried to overcome by narrowing the space between the lids. Presbyopia was the name for the defect of sight that came with age and caused crow's feet at the corners of the eyes of old men.

The lens grinders found surfaces departing from the shapes they tried to produce, and even the spherical shape at which they aimed was not the ideal shape to bring light to a perfect focus. The lens grinders included Roger Bacon, who sent a lens of his own making to Pope Clement IV; Sir Isaac Newton, whose interest in optics began with the grinding of lenses; Spinoza, who made lenses, although he was more famous as an ethical philosopher, and Leeuwenhoek, who, from making microscopes, proceeded to use them for the study of minute anatomic structures. The departures from true form produced various defects of refraction that limited the usefulness of the optical instruments; from the Greek word meaning to wander, they were naturally called aberrations. The most serious of the defects were those that produced undesirable separations and mixtures of the colors found in sunlight, "chromatic aberrations," and those that were caused by spherical surfaces, "spherical" or "monochromatic" aberrations.

Thomas Young found that his own eye focused on its retina, the rays diverging vertically from a point 10 inches (25.4 cm.) from the cornea, and horizontally from a point 7 inches (17.7 cm.) from the cornea. Rays coming from any point could not be focused, that is, brought together at a point. Two focal lines, one horizontal and the other vertical, were the nearest that the rays could be brought together. The astronomer Airy noticed that he could see a star as a point of light with his right eye, but that with his left it appeared as an elliptic blur, with its long axis about 35 degrees from the vertical. When he had a concave cylindric lens properly ground for the left eye, which had been defective from childhood, he saw as well with it as with the right eye. Airy's collaborator, Professor Whewell, suggested the word astigmatism to designate this defect, from two Greek roots meaning without a point, or focus. This form of defect, which could be corrected by a cylindric lens, was called "regular astigmatism." Later it was learned that there were eyes that were unable to focus rays to a point, but which could not be corrected by any cylindric lens; defects of this kind were called "irregular astigmatism."

A broader recognition of the defects of refraction in the eye made it clear that they depend on faulty curvature of the refracting surfaces, excessive or deficient lengths of the eyeball or an irregular index of refraction. In a large part of such cases, the essential fault

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is a disproportion between the length of the eyeball and the focal distance of the refracting surfaces. Donders suggested that the ideal refraction of the eye was that in which the refracting surfaces were perfectly proportioned to the length of the eyeball. This condition he called emmetropia, meaning true proportion. For lack of this, all eyes having defects of refraction were said to have ametropia. If the eye is too short its defect of refraction is called hyperopia; if too long, myopia. For astigmatism he accepted the term used by Airy, and classified aberrations as chromatic and monochromatic.

These different terms are still in use in the literature on refraction, but their meanings overlap and vary, so that they do not secure a clear understanding of the subject. For instance, spherical aberration is essentially an astigmatism. It prevents rays that come from a point being focused to a point. The curved surface of a cylindric lens, or a toric surface, will cause essentially the same kind of aberration, or astigmatism; it will cause a homocentric pencil of rays to become heterocentric, tending not to a point, but to different points of a line. It will make for a better understanding of the whole subject if one speaks of some aberrations as chromatic, and of others as due to obliquity of surface; however, one must recognize that the two kinds run into each other.

Chromatic aberration arises from the different refrangibility of light of different colors. It is closely connected with the refraction of light. But dispersion of color is not, as Newton thought, exactly proportioned to refraction. Chromatic aberration causes a problem in all optical instruments that require strong lenses. It is overcome by using materials with different powers of dispersion. These can be used in such a way that the chromatic effects will neutralize each other. In the eye, chromatic aberration is slight. It becomes of practical importance only with quite strong correcting lenses.

ABERRATION OF OBLIQUE SURFACES

Aberration of oblique surfaces is best understood by simple experiments. A prism is used before the eye for the change in direction it produces in the rays passing through it. It is best numbered by the amount of this change, expressed in degrees, centrads or prism diopters. The amount of such change depends on the obliquity of the surfaces of the prism to the rays passing through them. It is numbered according to the deviation produced when the prism is in the position of "minimum deviation." This position is when its surfaces make equal angles with entering and emerging rays. The position is shown in figure 1; the rays in the prism are perpendicular to the plane bisecting the refracting angle, indicated by the dotted line. If the prism is swung either way from this position, its effect increases.

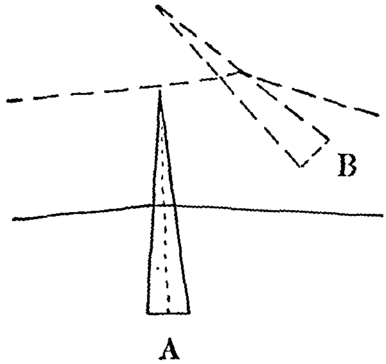

Fig. 1.—Prism strength. *A* indicates "minimum deviation"; *B*, refractive effect increased by obliquity.

Experiment 1.—Take a no. 2 prism from the trial case. Its effect is approximately the same, whether it is numbered for 2 degrees of refracting angle, 2 centrads of deviation or 2 prism diopters of effect produced on light passing through it. Hold the prism before the eye so that its thin edge (the refracting angle) is parallel to the side of a door, or window frame, across the room, or the corner of a building across the street. The line looked at should be seen above and below the prism, and through it. The part seen through the prism will appear displaced laterally, as compared with the parts seen above and below it. Now rotate the prism about a line parallel to the refracting angle of the prism and parallel to the line looked at.

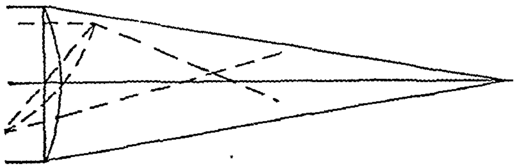

Fig. 2.—Cylindric lens. The solid lines show rays perpendicular to the lens; the broken lines, the effect of rotating the lens about its axis.

At first the part of the line seen through the prism will remain unmoved. As the prism is rotated farther, the part seen through the prism will begin to move slowly toward the thin edge of the prism. As the prism is turned farther, the line will move faster until it goes over to the edge of the prism and disappears. Whichever way the prism is turned, the line moves toward its thin edge. The obliquity makes it act as a stronger and stronger prism. Usually the prism must be rotated 10 or 12 degrees before the movement is perceptible; but when it is turned 40 degrees it equals the no. 4 prism, and the displacement of the line is doubled. When the rotation is 60 degrees, the effect is equal that of a prism numbered 10, for the position of minimum deviation; at 70 degrees it has the effect of a prism numbered 20.

A single trial of this experiment will convince one of the importance of the wandering off, the "aberration" of refraction, due to obliquity of the refracting surface. However, its importance justifies seeing it from other points of view.

Experiment 2.—Take a planocylindric lens (a convex 2 D. lens was used in this case, but any strength may be used; the same increase of strength is obtained with a concave cylinder). Hold it where it will receive the light from a small source, distant enough to make the rays practically parallel. An arc street light is about the best source. The direct light of the sun may be used, although the sun presents a disk one-half degree in diameter instead of a point. Hold the plane surface of the lens perpendicular to the incident rays. The light will be focused into a line parallel to the axis of the cylinder and one-half meter from it. It can be focused on a card held in the proper position. This line is seen at the middle of the shadow, because all the light passing through the lens is refracted to the focal line, leaving the rest of the circle in comparative darkness.

Slowly rotate the cylinder about its axis, which is still kept perpendicular to the incident pencil of the rays. At first no change is seen in the focal line. When the rotation has reached 10 or 12 degrees, the line becomes less distinct. It is again made distinct by bringing the card a little closer to the lens. The focal distance has been shortened—the lens made stronger—by its obliquity. On continuing the rotation to 40 degrees, the strength of the lens is increased to 5 D., and its focal distance is reduced to 20 cm. When the rotation reaches about 60 degrees, the effect of the 2 D. lens is 10 D., and the focal distance is reduced to 10 cm. This continues until the focal line fades out by total reflection within the lens.

As the obliquity of the lens increases and the focal distance decreases, a new cause of aberration becomes effective. One half of the lens comes nearer to the card on which the image is formed, while the other half goes farther away from the card than the axis of the lens. This modifies the image formed on the card. From one half of the lens the light may be fairly focused into a line parallel to the axis, but from the other half the light will not yet be focused to a line, or it will already have passed the focal line and be diffusing from it. In either case there are seen a line and a diffusion area, shaped more or less to an oval or a semioval. This form of diffusion image may be puzzling to the experimenter who sees it for the first time and does not perceive the reason for it. Its shape and distinctness are affected by whether the planosurface or the curved surface of the lens is turned toward the source of light. The focal line is the position in which the relations of the rays coming through the lens are reversed. Closer to the lens the lower rays are those that come through the lower half of the lens; beyond they have become the upper rays. At any position of the card some of the rays have already passed their focus, or some of them have not been brought to a focus. The position of the line on the shadow of the lens varies with the relative positions of the lens and the screen card.

Attention has not heretofore been drawn to this aberration of a rotated cylindric lens. Familiarity with it helps in the understanding of so-called spherical aberration, which is essentially the same as that of the cylindric lens. A section of a cylinder in the meridian perpendicular to its axis gives a section of its curved surface; that is, part of a circle. A section through the center of a spherical lens, in any axis, gives the same kind of a curve. If this kind of aberration is called spherical aberration, the aberration of a cylindric lens is also spherical aberration. It is better to class both with the aberration produced by rotating a prism or a plate of glass with plane parallel sides, the aberration of inclined surfaces.

Spherical aberration, mentioned in all books on optics, is the insurmountable obstacle to ideal lenses. It has not been given the simple, comprehensive explanation that recognizes its dependence on obliquity of surface. On account of it, a perfect spherical lens never can give a perfect focus. Because it is the easiest to grind, the spherical form has been used for lenses from the time of the old gem grinder of Babylonia. Mathematicians who have studied optics have suggested other forms of surface that could furnish perfect or ideal focusing of light, but these have not proved practicable for any general use. It is almost impossible to produce exactly the surfaces planned, and if they were exact, slight movement of the eye from the designed axis of the lens would destroy any advantage it was expected to have. The aspherical lens of Gullstrand is an attempt in this direction. However, any one who has worked with it knows how exactly it must be placed to get the slight advantage it is supposed to have over a planospherical lens. Spherical aberration has been chiefly overcome in optical instruments by partly neutralizing the aberration of one lens by that of another. This was the plan used by Huygens in the eyepiece for the compound microscope that is known by his name.

The essential facts of spherical aberration are illustrated in figure 3, which shows the section of a planospherical lens with all the refraction at its one curved surface. The figure has been drawn to scale to show the relative effects of different parts of the surface produced by differences of obliquity. The axial ray comes perpendicular to the surface and is not refracted. Any ray close to this and falling on the curved surface, with an angle of incidence of 1 degree, is refracted only about twenty seconds and intercepts the central ray at *A*, the principal focus of the lens for rays near the axial ray. Rays farther from the axial ray and falling on the curved surface more obliquely are focused nearer the lens, as at *B*. Those coming through the periphery are focused still nearer the lens at *C*. Rays from a single point being focused to different points make this a case of astigmatism, *A-C* being the focal line. What is now known as regular astigmatism was classed by Helmholtz as a special form of monochromatic aberration.

Rays coming in the opposite direction and falling first on the curved surface are but little affected by spherical aberration. Such rays are refracted toward a focus on entering the glass, and on leaving the glass are refracted somewhat in the opposite direction. The latter effect is greatest at the periphery, decreasing toward the center, and thus to some extent neutralizes the spherical aberration. The stronger the lens, the greater is the effect of the refraction at the plane surface. If the lens has a strength of 16 D., the aberration is less than 0.25 D. Near the limit of size that can be given, as fixed by the limiting angle for the refractive index of the glass used, the refraction at the emergent (plane) surface of the lens more than overcomes the spherical aberration, and the minimum aberration is obtained by making the emergent surface slightly convex.

For all forms and strengths of lenses to secure the minimum of spherical aberration, the more convex, or less concave, surface should be turned from the eye, and the more concave, or less convex, surface toward the eye. The biconvex and biconcave lenses that were formerly found in all trial cases produce spherical aberration at both surfaces. The amount of aberration at each surface is that of a lens of about half the strength, or the amount of a similar surface at half the distance from the optical center of the lens. This is less than the aberration produced by a planolens when parallel rays fall on the plane surface, but is much greater than that of the planolens properly placed to receive parallel rays on its curved surface. The biconvex lens produces its minimum aberration when the source of light is twice as far from the lens as its principal focus, and the rays divergent from the focus are converged to a point equally distant from the lens on the other side, corresponding to the position of minimum deviation for a prism.

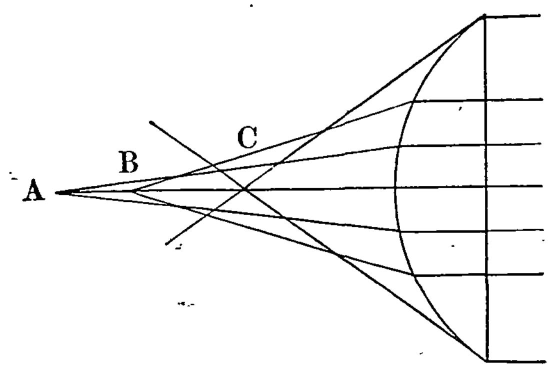

Fig. 3.—Spherical aberration of rays falling parallel on plane surface. The rays are focused along the axis from *A* to *C*.

EXPERIMENT 3.—This experiment, to visualize the facts of spherical aberration, is performed with a small bright source of light placed at such a distance that the rays will fall on the lens nearly parallel. Take the strongest convex lens from the trial case, and use a white card for a screen. Hold the card close to the lens and look at the circle of light that comes through the lens to fall on the screen. Held against the lens this circle seems evenly illuminated, but as the card is drawn away from the lens, the edge of the circle gets brighter. The most peripheral rays—those most refracted—turn in, so that they cross the next rays, as indicated in figure 3. As the card is moved farther from the lens the circle gets smaller, but continues to have a bright ring at its circumference, the more peripheral rays continuing to cross the less peripheral. When the card approaches the focal distance for the lens, a bright point appears at the center of the circle, where the most peripheral rays are brought to a focus in the center of the small circle of light still produced by the rays that have passed through the lens in its central portion. Before the whole circle has narrowed to a point—the proper focus of the lens—the rays refracted by the periphery have already crossed and are becoming diffused. These rays light up an area about the point of light, which is circular but has no bright definite edge. When the rays have all been focused and are diverging, this area of light with its indefinite edge continues to grow larger as the card moves farther from the lens. If the planolens is turned with its curved surface to the light and its plane surface toward the card, the greatest decrease in the aberration can be observed.

With a biconvex lens the bringing of the source of light toward the lens will decrease the aberration as the card moves farther away. When light and image are equally distant, the aberration will be least, but bringing either nearer than the other causes the aberration to increase. The aberration of oblique surfaces is the same whether the surface is convex or concave, but cannot be so easily demonstrated for the concave lenses.

Spherocylindric aberration is a name that may be given to the aberration of oblique surfaces, which is most important to all who wear or prescribe spectacles. Attention was called to it in 1887 in a paper read before the Section on Ophthalmology of the American Medical Association.[1] The subject so impressed Dr. John Green, the elder, that at the age of 59 he took up the study of mathematics, and published a paper entitled "Variations in Power of Lenses in Oblique Centrical Refraction."[2] This type of aberration, however, has never been sufficiently impressed on the medical profession. Every spherical lens is bounded by a portion of the surface of a sphere. A circle drawn on one side of a large ball will help to illustrate what happens to light falling on such a surface. If the pencil of light falls on the surface so that one ray, the axial ray, is directed toward the center of the sphere, perpendicular to the surface, there will be no aberration of this kind, but if the lens is turned so that it receives the pencil obliquely, aberration of oblique surfaces will occur.

Degrees of Obliquity *	Cylinder 1 D. Effect	Spherical 1 D. Effect	
0	1.00 D. cyl.	1.00 D. sph.	0.00 cyl.
5	1.01 cyl.	1.00 sph.	0.01 cyl.
10	1.04 cyl.	1.01 sph.	0.03 cyl.
15	1.10 cyl.	1.02 sph.	0.08 cyl.
20	1.17 cyl.	1.04 sph.	0.13 cyl.
25	1.30 cyl.	1.06 sph.	0.24 cyl.
30	1.44 cyl.	1.09 sph.	0.36 cyl.
35	1.69 cyl.	1.12 sph.	0.56 cyl.
40	2.01 cyl.	1.16 sph.	0.83 cyl.
45	2.46 cyl.	1.22 sph.	1.24 cyl.

* This table can be verified by experiment.

In the oblique position of the lens changes of strength occur in two meridians at right angles to each other, which create regular astigmatism. In one meridian, in the plane in which the lens is rotated, its refracting power is increased, just as the refracting power is increased in a prism or a cylindric lens rotated about its axis. In the meridian at right angles to the first one, the curve comes to act as a smaller circle of the sphere, a circle the plane of which passes farther and farther from the center of the sphere. So in both these principal meridians the refracting power is increased, but unequally so, more in the first meridian than in the second. This causes the lens to act as a stronger spherical lens to which has been added a cylindric lens. The aberration thus produced by different degrees of obliquity in a 1 diopter spherical lens is compared with the effect of like obliquity in a planocylindric lens in the accompanying table, which is quoted from the former paper.

Experiment 4.—Use the same arrangement and screens as for experiment 2, and take a 2 D. spherical convex lens. Starting with the lens perpendicular to the pencil of rays, turn it gradually to an oblique position. With 8 or 10 degrees of obliquity the image becomes slightly indistinct; it is made distinct by moving the screen a little nearer to the lens. When the lens is turned a little more, the image, instead of being a point or a small circle of diffusion, is found to be longer in one direction than in the direction at right angles thereto. On bringing the screen still closer, the image focuses into a line in the plane of rotation, and still closer, in another line at right angles to that plane. The action of the obliquely placed spherical lens has become that of a spherocylindric lens. As the rotation is continued, both the spherical and the cyclindric actions of the lens become stronger, but the focal lines are less sharp and distinctive, because of the increased spherical aberration and the half of the lens being brought by rotation nearer to the screen than the other half, causing the ovoid diffusion images previously alluded to in the experiment with a cylindric lens.

Chromatic aberration cannot be broadly separated from the aberrations produced by obliquity of surfaces. In spectacle lenses the colors produced are noticed only through parts of the lenses presenting the greatest spherical aberration, even when glass that has a wide dispersive range for the different colors of the spectrum is used. It is evident that aberration from oblique surfaces must lead to separation of the colors present in white light, and in high spherical aberration this separation becomes visible. When parallel rays are rendered divergent by a strong concave lens and the enlarging pencil of light is received on a white screen, the color rings appearing at the edge of the circle are a striking evidence of the aberration by obliquity of surfaces. The possible annoyance from color aberrations is reduced to insignificance by the far greater sensitiveness of the retina to the light of the center of the spectrum—green-yellow—as compared with light from either the red or the violet end. Adaptation to the stronger light prevents perception of the colored lights most widely separated from it. Color in a spectacle glass is chiefly important as a "selling point" for glasses of unpublished chemical formulas sold under copyrighted names, as are patent medicines.

Aberrations in the Eye.—The aberrations of oblique surfaces that cause so much trouble with optical instruments are often guarded against in the structure of the human eye. The anterior surface of the cornea, as a whole, is not spherical, but is flattened toward the periphery in a way that prevents most of the aberration that would be caused by a spherical surface of such great curvature. The central optical area of the cornea, which approaches a spherical curve, is placed so that it receives rays almost perpendicular to the surface, under conditions that conform most nearly to the conditions laid down by Gauss as the ideal conception for a lens. The pupil restricts the pencil of rays to the exclusion of those most disturbed by aberration. The crystalline lens has its shape rather compensatory for that of the cornea, and its refraction is supplemented in the high index of the nucleus. Contrary to what is sometimes stated with reference to all the needs of vision, the human eye is a superior optical instrument.

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[1] Jackson, Edward: Effects of Obliquity of the Correcting Lens to the Visual Axis, J. A. M. A. 9: 645 (Nov. 19) 1887.

[2] Green, J.: Tr. Am. Ophth. Soc. 7: 329, 1895.

Yet when it is examined by skiascopy with the pupil dilated, the eye always shows evidence of aberration. The most common defect is one closely related to the spherical aberration of convex lenses. The periphery of the dilated pupil is less hyperopic or more myopic than the center. This may not be perceptible within the central visual zone, about 4 mm. in diameter, that is always in use when the pupil is contracted by strong outdoor light or with convergence and accommodation for near work. The balance of mutual adjustment between corneal refraction and that of the lens is never perfect in the peripheral portions. In the majority of eyes, as in a convex spherical lens, the center of the pupil is more hyperopic and the periphery less hyperopic, like ordinary spherical "positive aberration." In a minority of eyes, this condition is reversed and the center is more myopic, "negative aberration." The latter state is most striking in conical cornea, in which the apex of the cone is highly myopic and the periphery of the pupil is little so, or even hyperopic. Low degrees of this form are much more common than characteristic cases of conical cornea. The senile lens sometimes shows such a change, which may be followed by cataract. This kind of negative aberration is generally the basis of "second sight," of which something has been known for hundreds of years.

IRREGULAR ABERRATIONS

The aforementioned forms of aberration are incident to what are called surfaces of revolution. A surface that can be ground by the turning of a spherical tool or a wheel is the only kind that is practicable to produce in large quantities for spectacle lenses; mathematicians and lens grinders have generally fixed their attention on such surfaces. The surface of the cornea was first considered to be spherical. Then its flattening at the periphery was noticed and it was considered a parabolic surface. Such surfaces are symmetrical with reference to the axis of revolution. When many corneas had been measured with the ophthalmometer, it was demonstrated that the corneal curvature was not that of a surface of a revolution, and the mathematical conception of a "tri-axial ellipsoid" was introduced as a better explanation of its nature. I called attention to the positive and negative forms of spherical aberration as "symmetrical astigmatism."[1] However, at the suggestion of Dr. John Green, Sr., I changed the title to "symmetrical aberration." All of the forms of aberration that have been discussed are symmetrical aberrations, belonging to mathematical surfaces of revolution.

There are other forms of optical aberration that are also of practical importance. Two of these have been widely recognized in skiascopic examinations by the movements of light and shadow that they cause in the pupil—the scissors movement and the pendulum movement. The scissors movement shows two light bands in the pupil, more or less parallel and approaching, or separating from each other, according to the direction the mirror is turned. The pendulum movement is shown by a single band of light, which does not keep the same meridian as it moves from side to side, or up and down, but swings like a pendulum around a center, much as the light swings around the apex of the cone in a case of conical cornea. These aberrations are not symmetrical, but depend on forms of surface that cannot be produced like a surface of revolution.

The scissors movement, or scissors aberration, can be caused by a surface of the cornea or of the lens that curves more in one portion than another. With the retina in a certain position or a certain lens before the eye, the movement of light and shadow in one part of the pupil is that of hyperopia, and in the other part of the pupil, that of myopia. This may be understood by figure 4, in which *R* represents the position of the retina.

This kind of aberration, due to corneal curvatures, may be found after extraction of cataracts, and sometimes after a broad iridectomy for glaucoma. The region near the corneal incision bulges, which makes a flattening toward the central part of the cornea. However, in such cases it is not often of practical importance, because it does not show in the central part of the cornea used for visual purposes. When the central pupil does show the aberration of scissors movement, the fault may be in the unequal curvature of different parts of the lens surfaces, since the ophthalmometer shows no deformity of the corneal surface. In such cases the practical importance of the aberration for the visual zone is that the region of the pupil that will be used when not dilated is the part that must be corrected. The two bands must be made to meet or to have their neutral zone in that part of the pupil.

The pendulum swing of light and shadow in the pupil is best understood as indicating conicity of the refracting surfaces, with the apex of the cone outside the region of the pupil, and generally outside the cornea, in the direction indicated by the converging meridians. The practical point of importance is to determine the meridian of the band when it swings across the central visual zone. The band may swing from the meridian of 70 degrees on one side, to that of 105 degrees on the other. But if its meridian, when it covers the visual zone, is 95 degrees, that is the direction to place the axis of the cylinder when one starts to make the subjective test.

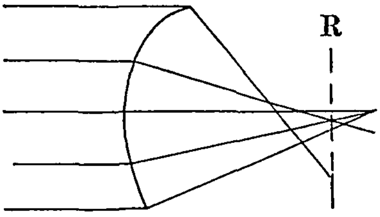

Fig. 4.—Irregular aberration causing scissors movement in the pupil. *R* indicates the position of the retina.

Accidental aberrations would be a good name for those that result from distortions of the corneal surface in small areas due to injuries by trauma or by ulcers, or those that impair the refraction of the crystalline lens by changes in the index of refraction of the lens in small areas. These changes may end in localized opacities in the lens, but often they impair vision without producing actual opacity of the lens substance. The irregular refraction may appear in radiating sectors of the lens, which sometimes go on to radiating opaque striae. One must remember that its influence on light is the most delicate test there is for the chemical constitution of a transparent substance. Some of the changes in the crystalline lens may be temporary. Even when great enough to cause a refractive aberration mistaken for opacity of the lens, the changes may pass away and leave the impression on the clinical observer that an opacity has been absorbed. Temporary accidental aberrations should be systematically looked for in the experimental study of the etiology of cataract. The accidental aberrations due to corneal lesions should be studied in the period of recovery from corneal opacities.

DEALING WITH ABERRATIONS

About a century ago Gauss worked out his theory of refraction by lenses. It is an academic theory attractive to mathematicians, and applies to a lens only so far as it is not a lens. It got rid of aberrations by ignoring them. It conceived of refraction by a lens as occurring at one plane surface, and it applied only to rays perpendicular to that surface, or so nearly perpendicular that their obliquity could be ignored, as mathematicians wipe out differentials of a higher order in calculus. To vary an old conundrum, when is a lens not a lens? The answer is when it conforms to the Gauss theory. By his assumption, aberrations of obliquity do not exist. The mathematical discussions based on the theory of Gauss may be read in Helmholtz' "Physiologic Optics."[3] A more valuable conception of the importance of aberrations is obtained by the experiments detailed in this article, which point directly to the effects of necessary departures from the Gauss theory and the practical precautions that limit the aberrations of oblique surfaces.

It will be seen that up to an obliquity of 10 degrees, the effects are scarcely perceptible, and only when it rises to 15 degrees do they become important, rising to one-tenth the strength of the lens. Greater angles of incidence are avoided by so shaping and placing the lenses before the eye that the ordinary movements of the eye will keep its visual axis this near to the axis of the lens. The posterior surface of the lens must usually be placed one-half inch (1.27 cm.) in front of the surface of the cornea, which will be 15 mm. in front of the first principal point. This will be about 28 mm. in front of the center of rotation of the usual eyeball. In this position of the spectacle lens, the rotation of the eye 15 degrees in any direction will cause the visual axis to pierce the lens 8 mm. from its optical center. This makes the circle of the lens 6 mm. in diameter, in which the aberration for even a flat biconvex or biconcave lens will be only one tenth of the refractive power of the lens and practically negligible. With a properly turned planolens, the aberration will be much less than this, and the region of the lens that can generally be used will be correspondingly larger. With any reasonably curved meniscus lens, the part of the lens that can be freely used will be still larger, over the whole width of the lens, even when the head is held rigidly fixed and the field of regard is covered entirely by the rotation of the eyeball in the orbit.

When I wish to change the direction of the eyes, I begin to do so by rotating the eyeball in the orbit. But when this has proceeded to 12 or 15 degrees, it is almost always supplemented by turning the head in the desired direction. Turning the head always turns the direction in which the glasses face. Turning the direction of fixation to any extent entails less than 20 degrees of obliquity of the lens surfaces and a correspondingly important amount of aberration. Hundreds of observations on the turning of normal eyes show this general limitation of the turning of the eyes in the orbit.

It is possible to sustain perfectly good binocular vision for a large amount of work with the eyes without using anything like 20 degrees of rotation of the eye in the orbit. A man, aged 46, who had been an accountant and office worker for thirty years, suffered from a "sun stroke." He had almost complete bilateral ophthalmoplegia. He had less than 5 degrees of vertical excursion of either eye and less than one-third the normal lateral movements. Twenty years later, with 10 degrees of prisms base out for distance and 3 degrees base in for reading, he had good binocular vision, could do his near work and enjoyed traveling. Probably most persons using glasses could learn to use their eyes without more than 10 degrees of rotation of the globe in the orbit, and with no more difficulty or annoyance than they experience in becoming accustomed to any new pair of glasses for a change in the fashion of frames or coflexures. When looking obliquely, so that the effect of obliquity can be noticed, the turning of the head begins to lessen the aberration.

When the prescribing of glasses for hyperopia and astigmatism began, the opticians were fairly familiar with the effects of aberration in strong glasses and had a practical understanding of the importance of reducing obliquity of refracting surfaces. The empiric rules of turning the convex, or more convex, surface from the eye and the concave, or more concave, surface toward the eye were followed by the more competent opticians. To make this plan more effective, periscopic lenses having a base curve of 1.25 D. were put on the market as soon as the metric system of numbering was adopted. Later the so-called toric form, with a base curve of 6.50 D., was widely adopted. Still later, lenses still more strongly menisciform were introduced under copyrighted names, and extravagant claims of their superiority were pressed on the attention of ophthalmologists and the public by specious advertisements, much as the general public is influenced by the copyrighted names but unpublished formulas of the so-called patent medicines.

The essential precaution to prevent and limit the aberration of oblique surfaces is to keep these surfaces as nearly perpendicular as possible to the rays that pass through them. The prism must be kept near its position of minimum refraction, the rays in the prism falling perpendicular to the plane that bisects its refracting angle. With lenses the rays should be nearly as possible perpendicular to a theoretical or assumed curved surface, half-way between the two refracting surfaces of the lens. An understanding of this will make one safe from unjustified claims of superiority made by eager salesmen for the lenses they wish to sell.

Perfect coflexures for a meniscus lens are impossible. The ideal would be a curve with its center at the center of rotation of the eye, the equivalent of the Gauss lens, with the refraction all in one surface. Besides the departure from this to a convex curve in front and a concave curve behind would be the variations of different depths of the eye in the orbit and differences of the depth of the center of rotation in different eyes. The best one can do is to approximate the impossible ideal: (1) making each part of the surfaces as nearly perpendicular to the rays to be refracted by them as is practicable, and the proportions of the two surfaces such that the necessary aberration of obliquity in one will partly neutralize the aberration of the other; (2) placing the lens in such a position in front of the eyes that the necessary changes in direction of the eyes will produce only a minimum of aberration, of which the wearer will usually be unconscious. Every experiment here described shows that when the obliquity begins to change the effect is at first imperceptible and becomes important only when the direction of the eye is altered more than is necessary in ordinary use.

A harmful by-product of the use of copyrighted lenses with curves carefully calculated by "expert" mathematicians (but not published) has been the tendency of opticians to neglect the proper facing of the lenses in the frame—forward for distance and downward for near work, and in general more nearly perpendicular to the stronger part of the lens, which always has the greater aberration and allows the least departure from the perpendicular without aberration of practical importance. During the last year, opticians who fully appreciated years ago the importance of keeping down the obliquity of the lens surfaces have dispensed quite poorly fitted spectacles, showing that they were relying on the curves calculated by expert mathematicians and advertised "clear to the very edge" to save themselves the trouble of thinking about the position of the lenses before the eyes or to make any position that "looked best" optically satisfactory.

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[3] Helmholtz, H. L. F.: Handbook of Physiologic Optics, translated by J. P. C. Southall, Rochester, N. Y., Optical Society of America, vol. 1, p. 57. See Appendixes by Gullstrand, p. 261.

"Trifles make perfection, but perfection is no trifle." "The best is none too good" in correcting optical defects of eyes put to strenuous work on tasks more difficult and exacting than the great majority of eyes have been developed to meet and under conditions far from the best for the health and efficiency of the eyes. In the optical assistance of the imperfect eye there has been opened up a field of service that is still incompletely occupied, but which is still enlarging.

The field of irregular ocular surfaces and irregularities of refraction known as irregular astigmatism or irregular aberration must be viewed from the same direction as has conical cornea. The practical thing to do is to substitute a good refracting surface for a poor one through the use of the contact glass, which has now been proved a practical resource for certain aberrations of the eye that cannot be corrected in any other way. Good service in ophthalmology can be rendered only by considering all these possibilities and by meeting them in the most efficient and simple way.

ABSTRACT OF DISCUSSION

Dr. Henry C. Haden, Houston, Texas: With the advent of the new prescription lenses and the desire for the greater elimination of aberration of oblique surfaces, there came criticism of the trial sets with their biconvex and biconcave lenses and their monochromatic aberration. If one will analyze the question, one will find that there is no cause for fear that the prescription lenses will not conform to the measurements made with the trial lenses. If the trial lenses were made now as they once were, with their numbering representing approximate power or equivalent power, of course conformity could not be obtained by practicable methods. Fortunately, since Mr. Prentice's investigation a number of years ago, the numbering of the lenses in standard trial sets gives their actual power in vertex refraction, which is the reciprocal of the back focus, so that if the back surface of the lens in the trial frame is 14 mm. from the anterior surface of the cornea, the effective power of the spectacle lens should be the same. In measuring the refractive error one must use a combination of lenses; since their surfaces are not in actual contact, the result is not mathematically correct. If, however, the slots in the frames are close together and the final correction is at most two lenses, sphere and cylinder, this error is reduced to a minimum. To minimize the disturbance from monochromatic aberration in using flat trial lenses, the trial lens should be placed vertically before the eye at a distance of 14 mm.; the optical center of the lens should be opposite the pupil, and the normal line of the test card and the 6/6 line, if one works at 6 meters distance, should be on the same level as the eye. If these precautions are observed there will be practically no disturbance from spherical aberration, for the visual line of the patient's eye will coincide with the axial ray. Unquestionably, some prescription lenses are made more mechanically perfect than others. I do not refer to the patented curves but to the actual perfection of whatever shape or construction it is claimed that they have and to the finish of their surface. Unfortunately, Americans demand that a product, be it automobile or lens, must be advertised to be sold. And the makers of lenses advertise. It is no more practicable for the average ophthalmologists to go into the details of the construction of lenses than it is for the general physician to analyze the many synthetic drugs offered by pharmaceutic houses. We should therefore have a committee composed of such men as Dr. Jackson, selected from the various ophthalmologic societies, and made an authoritative part of the American Medical Association. The committee could examine the different makes of lenses and pass on them as the Council on Pharmacy and Chemistry does on pharmaceutic products.

RESULTS IN THE TREATMENT OF ACUTE APPENDICITIS

REVIEW OF 4,270 CASES IN ATLANTA

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It is charged that recently the medical profession has not given the study of acute appendicitis the attention demanded by its frequency and gravity. Judging from the increasing number of papers that have been published on the subject, such a charge is unfounded. According to the *Quarterly Cumulative Index Medicus*, in the five year period, 1916 to 1920, 512 articles on appendicitis appeared in the world's literature, 209 of which dealt with acute appendititis. From 1921 to 1925, 836 papers on the disease were printed, 308 of which concerned the acute variety. From 1926 to 1930, 1,755 papers were published, acute appendicitis being discussed in 533. During the past fifteen years, five papers on appendicitis have been read before this section. The last one was read five years prior to the writing of this paper.

STATISTICS FOR ATLANTA

The present study of the results obtained in the treatment of acute appendicitis is based on a review of 4,270 cases in which treatment was given by 197 surgeons in 8 hospitals in Atlanta during five years, from 1927 to 1931, inclusive. All except 46 of the patients were submitted to operation. Half of this number refused operative treatment, and recovered from the attack. For various reasons operation was postponed in the other 50 per cent of these patients, who were treated conservatively, with 5 deaths.

It is fair to assume that 4,270 represents 95 per cent of the patients treated in Atlanta during this time. The remaining 5 per cent should cover those treated at home and those who were cared for in a few small hospitals the records of which were not obtained. The patients from outside the city, 388, probably make up for the number not counted in the city. Estimating the average population of metropolitan Atlanta for this period as 325,000, 1.3 per cent of the inhabitants suffered from acute appendicitis some time during these five years, or 1 in every 380 persons annually. One-third of the population is colored, and the disease was found to be six times as common in white as in colored people.

CHRONIC APPENDICITIS EXCLUDED

Care was taken to include only the acute form of appendicitis in these figures. The mortality rate in large series has been questioned on the ground that

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the condition was not acute in every instance at the time of operation. In checking the hospital histories for this survey more than 100 charts labeled as acute appendicitis were rejected, because neither the clinical record nor the report from the pathologic laboratory seemed to justify such a diagnosis. In 90 per cent of the appendixes removed in this group the primary pathologic lesion present was reported by the laboratory as acute. The majority of the remaining 10 per cent of specimens did not reach the laboratory, and the diagnosis was made in the operating room on gross appearance. There were a few cases in which the pathologic report was chronic appendicitis, but the clinical course of the illness and the gross appearance of the appendix in the operating room warranted the diagnosis of acute appendicitis.

MORTALITY RATE

The method of reporting mortality rates adopted by insurance companies and departments of public health is the number of deaths among 100,000 population. Thus the United States Bureau of Public Health Service shows an increasing death rate from appendicitis in the registration area, as follows:

1900	9.7
1905	11.9
1910	11.4
1915	12.5
1920	13.4
1925	15.2
1929	15.2

The figures on the mortality rate for Atlanta given by Dr. Frederick L. Hoffman, in the *Spectator* (Aug. 27, 1931) are: 21 per hundred thousand for 1929, and 21.7 per hundred thousand for 1930.

Such figures as these may interest the professional statistician but convey little practical information to the physician or surgeon. What he wishes to know is, how many patients who had acute appendicitis died from the disease? The number of deaths in 4,270 cases in Atlanta was 188, or 4.4 per cent. It has been said correctly by many writers that most of the fatalities in appendicitis result not from the disease in the appendix, but from its immediate complications, such as peritonitis, abscess and ileus. The mortality rate of 4.4 per cent fits well into this statement, as investigation of the records show that 4 per cent of this death rate was due to complications, and 0.4 per cent was due to appendicitis, including sequelae not caused by the method of treatment, such as pneumonia and cardiac lesions. Thus the probability of recovery if treatment was instituted before complications had time to occur was 400:1, whereas, after the development of complications the chances might be as few as 25:1.

TABLE 1.—*Record by Years*

Year	Patients	Died	Percentage
1927	775	33	4.26
1928	735	44	6.00
1929	804	25	3.00
1930	886	36	4.00
1931	1,071	50	4.60
	4,270	188	4.40

The following tables give the number of cases and deaths by years, sex, race, hospitals, age decades and months.

These figures appear to fall in line with similar ones issued from other centers. Usually the preponderance of male patients is greater than that given here. Why the mortality in men is almost twice that in women is not clear.

APPENDICITIS IN NEGROES

TABLE 2.—*Record by Sex and Race**

	Patients	Died	Percentage
Males	2,218	126	5.7
Females	2,052	62	3.0
White	3,984	146	3.6
Colored	286	42	14.0

* Average number of hospital days per patient, for five years, 12.6.

Considering the lesser incidence of appendicitis in the colored race, one is reminded of McCarrison's[1] experience in India, where he found no example of the disease among several thousand patients who ate "natural foods" and nothing that had to be preserved. Most Negroes in the south live on such a diet, consisting of cornbread, peas, cabbage and "pot likker" (turnip green juice). Thirty years ago appendicitis was almost a novelty among these people. While the incidence compared to that in the white race is still low, it is increasing, as the colored man abandons his simple food and eats more meat and sugar and foods that have been polished, pickled, frozen, thawed and sterilized.

TABLE 3.—*Record by Hospitals*

Hospital (1929-1931)	Patients	Died	Percentage
1	1,157	45	3.88
2 (charity)	820	38	4.20
3	814	30	3.70
4	628	17	2.70
5	392	9	2.30
6 (colored)	286	42	14.00
7	159	4	2.50
8 (children)	14	1	7.00

The mortality rate was four times higher in the colored population, for which there are two causes. First, the average length of time consumed in reaching the hospital after the onset of symptoms was one hundred and four hours for colored patients and fifty-one hours for white patients. Second, while the gospel of not taking a purgative for every stomach ache has reached a large mass of white people, it has yet to come to the ears of the Negro. Nearly every colored patient with appendicitis had taken purgatives before admission, generally in large amounts, such as 10 and 12 tablespoonfuls of castor oil. Massive doses of epsom salts also were swallowed in the striving to get rid of the abdominal pain. Sometimes the patient was saved because the salts were vomited. Saline cathartics are particularly pernicious in these cases, since they fill the intestines with fluid, so that when perforation takes place the peritoneal cavity is flooded with intestinal contents. The records show that every Negro who died had taken preoperative purgatives.

DANGER OF PREOPERATIVE PURGATIVES

Two lessons that have been impressed on medical students and on the medical profession and the public in regard to the treatment of appendicitis have been to avoid the administration of preoperative opiates and preoperative purgatives. One of the principal objects in preparing the present paper was to learn, if possible, what were the results of the violation of these fundamental rules. It was a surprise to find that only 37 patients in the series were given opiates before entering the hospital. No doubt the number was considerably larger, but numerous well written and ample case histories failed to state that opiates had been given, and many records took pains to emphasize the fact. However, in 34 of the 37 patients who received opiates complications developed due to delay in operating, and 3 died.

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[1] McCarrison, Robert: Faulty Food in Relation to Gastro-Intestinal Disorder, J. A. M. A. **78**: 1 (Jan. 7) 1922.

Table 4.—*Record by Age Decades**

Ages	Patients	Died	Percentage
1 to 10	274	17	7.0
11 to 20	1,275	40	3.0
21 to 30	1,495	35	2.3
31 to 40	425	25	6.0
41 to 50	230	24	10.0
51 to 60	119	18	15.0
61 to 70	51	13	25.0
71 to 80	11	2	18.0

* One patient, aged 87, and one aged 6 months recovered. The oldest patient to die was 75 years; the youngest, 2 years.

The charts chronicled 475 patients as having received preoperative cathartics. This was only 11 per cent of the total number of patients, whereas most series show that as many as 50 per cent of patients receive such medication. Manifestly the histories were incomplete. At any rate, 75, or 15 per cent of the 475 who received purgatives, died. Seventy-five was 40 per cent of the total number of 188 deaths.

Transporting patients long distances, from 50 to 200 miles, by train, ambulance or automobile, apparently did not lessen the chance of recovery. Three hundred and eighty-eight patients were thus brought into the city and operated on for acute appendicitis. Sixteen died, a percentage of 4. In 55 cases the appendix was not removed, and only drainage instituted; 26, or 47 per cent, of these patients died. There was a record of only 1 returning later for appendectomy, which was done with a fatal result. Some form of drainage was instituted in 809 operations, 18 per cent. Only the abdominal wall was drained in one fourth of these cases

Table 5.—*Record by Months*

Month	Patients
January	324
February	372
March	401
April	394
May	417
June	361
July	416
August	365
September	320
October	271
	275
	294

TREATMENT

It is not within the scope of the paper to discuss methods of treatment. The time of the operation plays the biggest part in the result. It has been well said that it is better to have an early operation performed by a general practitioner than a late operation performed by a professor. Usually when the operation is completed, the patient's fate is sealed. Postoperative management can seldom alter the ultimate outcome, although it may add much to comfort. Orthodox treatment, operative and otherwise, seemed to prevail in the majority of these cases. Saline solutions and dextrose were administered generously by all routes. In serious cases of appendicitis the patients are not only dehydrated by vomiting and sweating, but also by the fluid that is poured into the intestinal canal. Physicians do not yet seem to appreciate the value of inhalations of carbon dioxide after operations to prevent pulmonary complications.

UNUSUAL METHODS OF TREATMENT

Two unusual methods of treatment in complicated cases were discovered. First, the method described by Crisler,[2] in which tincture of iodine is poured freely into the peritoneal cavity in the presence of diffuse peritonitis, was tried in 4 cases, with a mortality of 50 per cent. Ten ounces (295 cc.) of a 2 per cent solution of iodine was used. The other unorthodox method of treatment in serious cases, used by several members of the medical profession in Atlanta, is known as the calomel method. Half grain doses of calomel are administered every half-hour for 6 doses, beginning immediately after the patient is able to swallow. The advocates of this method claim that a case of ileus has never occurred following this treatment. A strenuous modification of the method is to leave a large rubber drainage tube close to the ligated stump of the appendix. Large doses of calomel are then given in the hope of establishing a fecal fistula, which sometimes succeeds. The justification of this method lies in the idea that patients with fecal fistulas always get well.

Table 6.—*Complications*

Complication	No. Cases	Per Cent	Deaths	Per Cent
Gangrene	690	16.0	88	13
Perforation	410	9.5	105	56
Abscess	197	4.3	32	16
Peritonitis*	335	7.8	110	33
Ileus	33	....	15	46
Diverticulum	7	....	..	..
Fecal fistula	7	(Enterostomy	performed in 18	cases with
Phlebitis	2	(Femoral vein)		10 deaths)
Pneumonia	12	....	6	50
Lung abscess	3	....	..	..
Lung collapse	1	....	..	..
Lung embolus	2	....	1	..
Empyema	1	....	1	..
Heart lesion	3	....	3	..
Dilated stomach	1	....	1	..
Diabetes	2	....	..	..
Pregnancy	8	....	1	..

* Peritonitis caused 60 per cent of the total deaths.

Among complications were the ones given in table 6.

All abscesses were located in the right iliac fossa, pelvis or loin. Subphrenic abscesses were absent. The draining of appendical abscesses through a stab wound in the loin is popular with surgeons in Atlanta. Peritonitis means general peritonitis, suppurative and nonsuppurative. Most cases of ileus were of the paralytic, or adynamic, type. Spinal anesthesia was helpful in relieving the condition. The majority of fecal fistulas closed spontaneously. A few were treated successfully with suction drainage. Enterostomy is to be preferred to cecostomy, although the results in both procedures are often disappointing. Enterostomy is more useful in the dynamic, or mechanical, type of obstruction. It was employed as a secondary operation in these cases.

Formerly all pulmonary complications following operations of this kind were called pneumonia. Closer scrutiny perhaps would demonstrate that some were pulmonary collapse or embolism. There are two important late sequelae that could be studied only by a follow-up system. These are dynamic ileus and postoperative hernia.

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[2] Crisler, J. A.: A Further Study in the Use of Iodine in Combating the Peritonitides, Tr. South. S. A. **28**: 230, 1915

ANESTHESIA

Local anesthesia was used in 77 operations, with 17 deaths, or 22 per cent. Spinal anesthesia was used 382 times, with 26 deaths, or 7.3 per cent. In the other cases general anesthesia of various forms and combinations was employed. Usually local and spinal anesthesia are selected only in poor risks, but some operators prefer spinal anesthesia as a routine measure. Only a single death occurred under spinal anesthesia that might be attributed to the anesthetic.

Table 7.—*Relation of Delay to Mortality* *

Patients Admitted to Hospital	Number	Deaths	Per Cent
Less than 6 hours after onset of symptoms and operated on immediately	219	0	0
Between 7 and 12 hours	578	6	1.0
Between 13 and 18 hours	204	2	1.0
Between 19 and 24 hours	826	22	2.6
Between 25 and 36 hours	178	22	1.2
Between 37 and 48 hours	595	28	5.0
Between 49 and 72 hours	335	22	6.5
More than 72 hours	578	48	8.0
		150	

* Owing to incomplete history charts, this table does not account for all patients and all deaths, but enough is shown to indicate the relation of delay in treatment to the mortality.

CONCLUSIONS

The conclusions drawn from the consideration of the results in this series of cases of acute appendicitis coincide with those of Royster,[3] Bower,[4] Gerster,[5] Miller,[6] Ochsner,[7] Foss[8] and others who have written so forcibly on the subject. A disease fraught with so many sudden, unavoidable complications is bound at times to result fatally, even under the most favorable surroundings. The fact that there were no deaths among 219 patients admitted within six hours after onset demonstrates the immense value of prompt action. Most of these patients were students and nurses under closer supervision than the average person. Even in this group, however, mortality may occur. Occasionally a violently fulminating case occurs, such as Wilkie's acute appendical obstruction, in which no amount of experience and skill may save the patient.

Table 8.—*Causes of Death*

Pregnancy	1
Dilated stomach	1
Empyema	1
Pulmonary embolus	1
Pneumonia	6
Heart lesion	3
No operation	5
Abscess	32
Ileus	15
Peritonitis	110
	175
Undetermined	13
	158

The two outstanding factors in mortality and morbidity are delay in operative treatment and the promiscuous administration of purgatives before operation. The fault usually lies with the patient or with his family or friends, but the attending physician or surgeon is not always blameless. The error may be due to ignorance on the part of the patient, but it also may occur with the knowledge and consent and advice of the medical attendant. The physician's mistake is not one of ignorance, but of carelessness. Efforts must be continued and enlarged in the education of the public as to the early care of abdominal pain, a campaign that has been waged so vigorously in Philadelphia. The medical profession, however, must not be guilty in this respect, and not let familiarity with the commonest of all surgical diseases induce criminal somnolence.

ABSTRACT OF DISCUSSION

Dr. J. C. A. Gerster, New York: Appendicitis mortality rates are higher in the United States and Canada than in any other civilized nation; and since 1920 there has been a definite upward trend—in 1930 about 15 per hundred thousand—double that of England and Wales. Analysis of 34,408 deaths from appendicitis among industrial policyholders of the Metropolitan Life Insurance Company shows that appendicitis ranked second only to cancer among surgical diseases. I am indebted to the statistical department for these figures. Dr. Boland said that in Atlanta appendicitis is six times as common among white persons as among Negroes, and he ascribed this to more primitive food and living conditions of Negroes. Dr. Louis T. Wright reports that appendicitis is frequent among Negroes in New York. Histories of preoperative purgation were common in both white persons and Negroes. In Philadelphia, education of the public regarding dangers of catharsis and delay in the presence of abdominal pain reduced appendicitis mortality from 16.4 in 1927 to 13.9 in 1931. I previously called attention to a small series of postoperative intestinal obstructions, caused by adhesions between the omentum and the posterior parietal peritoneum or the mesentery of the small intestine, directly traceable to failure to pull the omentum through the appendectomy wound and replace it superficially to the intestine before the peritoneum is closed. In any large series of cases with typical symptoms of acute appendicitis, the appendix will be found normal in a small percentage. However, the percentage in which an acute suppurative process is present is so overwhelmingly preponderant that in the face of typical symptoms one dares not leave the abdomen closed. A low blood count is no contraindication to operation. As Dr. Joseph A. Blake says, "if the patient shows any one of the cardinal signs of appendicitis, it is safer to operate."

Dr. John O. Bower, Philadelphia: If the health department of every state and municipality in the United States would institute a yearly survey such as Dr. Boland has conducted in Atlanta, the mortality of acute appendicitis would gradually diminish. Delayed hospitalization and the administration of laxatives are responsible for 90 per cent of the deaths. These factors are controllable, as the surveys in Philadelphia demonstrate. In elaboration of Dr. Boland's point regarding mortality rate, one must face the fact that, although 1,050 articles were written on acute appendicitis from 1916 to 1930, the mortality rate has not been diminished. The writers of these articles with two or three exceptions have reported series of cases emphasizing individual mortality rate. If the gross mortality is to be decreased in the United States, the true condition in hospitals must be reported. The surveys in Philadelphia show that many years of experience do not always mean a low mortality, especially in the management of spreading peritonitis. If Dr. Boland conducts another survey, I would suggest that particular attention be given to the separation of the peritonitis group into the spreading and local types. I believe that the term "spreading" should be used instead of

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3. Royster, H. A.: The Tragedy of Appendicitis, Pennsylvania M. J. **34:** 376 (March) 1931.

4. Bower, John O.: Acute Appendicitis, J. A. M. A. **96:** 1461 (May 2) 1931.

5. Gerster, cited by Christopher, Frederick: Pylophlebitis of Appendiceal Origin Simulating Lung Abscess, S. Clin. North America **1:** 1903, 1921.

6. Miller, C. Jeff: Appendicitis Once More, Surg., Gynec. & Obst. **52:** 1038, 1931.

7. Ochsner, Alton; Gage, I. M., and Garside, E.: Intra-Abdominal Post-Operative Complications of Appendicitis, Ann. Surg. **91:** 544 (April) 1930.

8. Foss, Harold L.: Peritonitis of Appendiceal Origin, Pennsylvania M. J. **35:** 182 (Dec.) 1931.

"general" or "diffuse," because "spreading" carries with it the additional meaning of something in action. If internists and surgeons would adopt the term for cases which it describes, operation would be more cautiously considered. A diagnosis of spreading peritonitis before admission to the hospital is unusual. In fact, diagnosis of peritonitis before admission is unusual. This is a problem for the internist. The management of spreading peritonitis is still one of the most difficult problems in major surgery.

DR. SOUTHGATE LEIGH, Norfolk, Va.: In the treatment of those cases of appendicitis in which the appendix has been ruptured without limiting adhesions, resulting in the discharge of septic materials into the free peritoneal cavity, the usual method is to insert cigaret drains and "trust to luck." The general understanding is that these drains are shut off within a few hours by limiting adhesions, and in that short space of time it is manifestly impossible, regardless of the position in which the patient is placed, for the pus to gravitate to the drains. The result is multiple abscess formation, and in many cases general peritonitis and death. A careful search of the literature discloses that practically no effort has been reported as having been made by the profession to delay the formation of these adhesions long enough to drain out the pus safely. I have demonstrated to my own satisfaction, and with the recovery of the patient in otherwise probably hopeless cases, that such shutting-off adhesions can be delayed for several days, certainly long enough to permit safe and complete draining off of the septic fluids. This is done by overfilling of the blood vessels and lymphatics of the peritoneal cavity, so that the peritoneal surfaces become excretory surfaces to such an extent that they fail to adhere one to another. Such overfilling is done by getting into the bowel a large amount of fluid, beginning during or immediately after the operation, and continuing without cessation for three or more days. This overfilling of the vessels is aided also by fluid given under the skin and into the vein. By this method the discharge from the drains, instead of rapidly diminishing, steadily increases and gets thinner and thinner as time passes, requiring frequent change of outside dressings. A transverse incision is preferred: large, soft, noncompressible rubber tubes are passed down deep in the pelvis and brought out at the right end of the incision. A gauze wick is inserted into each tube and changed every twelve hours. The patient is elevated high up and placed on the right side, so that the outer ends of the tubes become the lowest point of the pelvic and abdominal cavities. Rectal fluid is given constantly and to saturation by the rectal drip, and both subcutaneous and intravenous administration of fluid is added as indicated. These cases require constant and unremitting care on the part of the surgeon, in addition to the most expert and intelligent nursing. In more than a hundred cases, with the exception of those in which the patients were admitted in a moribund condition, there has been practically no mortality.

DR. ROLAND HILL, St. Louis: Dr. Boland's statement regarding the use of purgatives is one with which all agree. Purgatives have no place in the treatment of acute appendicitis. On the other hand, with regard to opiates, I believe that an opiate is indicated if the patient is willing to have an immediate operation, and the danger of it is in causing the patient relief and causing him to delay. My experience with appendicitis has changed materially in the last few years, because, I think, of the change of methods. In the last 300 cases that I have done, including the chronic, the subacute and the acute, there have been but four deaths. There were sixty-three drainage cases with three deaths and another death from a fulminating blood infection after forty-eight hours, in what seemed to be a simple case. The plan of treatment is changed now, and the mortality that I formerly had is cut down to probably a third. In all cases, unless the patient is moribund or unless the disease is distinctly subsiding, I operate at once. The appendix is removed and the pus sucked out; if it has extended to the kidney regions it is sucked out from one or both sides and multiple drainage is instituted. Instead of being placed in the Fowler position, the patients are put to bed. The head of the bed is elevated 1 foot. The patient is turned on his abdomen with a pillow under his chest and one under his head. The position is uncomfortable but it brings the purulent products to the hollow of the abdomen, it gives a maximum of gravity drainage and, I believe, distinctly slows absorption. With this, of course, physiologic solution of sodium chloride is used, together with dextrose, and absolutely nothing is given by mouth under any conditions except a little water—no nourishment of any kind, no purgatives of any kind, no enemas of any kind. In three days' time the patient will pass gas naturally, and the recovery has been remarkable in the vast majority of cases. Generally the drains are out in forty-eight hours.

DR. HAROLD M. TRUSLER, Indianapolis: The adynamic ileus that occurs as a complication of appendicitis is of serious consequence only when it indicates a generalized spreading peritonitis. The ileus that occurs from localized peritonitis or pelvic abscess is in reality not adynamic. The intestine above the abscess or the localized area of peritonitis is vigorously contracting; there is vigorous peristalsis. By the simple process of auscultating the abdomen, borborygmi can be heard, and if on the third or fourth postoperative day borborygmi cannot be heard after suitable efforts, one may be sure that some form of spreading peritonitis is present, and the outlook is grave. In the form of ileus that generally complicates a localized peritonitis, the effect is that of a mechanical obstruction. It has been my experience that a simple enterostomy will often save the life of a patient who otherwise would die of this complication. I am relieved that no one has conducted an argument on the subject of immediate versus delayed operation in acute appendicitis; in other words, the well trained surgeon should select his procedure according to the individual case. Some are delayed with benefit, but by far the greater number are most safely managed by performance of the operation as soon as the diagnosis is made. One should never be guided entirely by one rule or the other. As Dr. Royster has indicated in his excellent book on the subject, the diagnosis of acute appendicitis is not always easy, and at times a positive differential diagnosis is impossible. I feel that many honest physicians are too conservative in the matter of advising operative procedures when acute appendicitis is suspected. Those who do advise operation in the doubtful case are often unjustly criticized. These attitudes go far to explain the high mortality in acute appendicitis.

DR. HORACE REED, Oklahoma City: It is evident that until the patient is seen earlier the mortality from acute appendicitis is not going to be lessened. The remarks that are directed to the treatment of the complications are varied and differ widely, but all can agree on one thing, that if the patient is operated on before rupture takes place, the mortality will be negligible. The public ought to know something about the first signs of acute appendicitis. I should like to see deleted from the English language a term which is too often used, which satisfies the newspaper reporter and too often lulls the physician, and that term is "acute indigestion." Acute indigestion is not always appendicitis, but acute appendicitis always begins, to the uninitiated, as acute indigestion. In our own state, efforts are being made to educate the public on the early signs of acute appendicitis. In one large organization in our state in which there are something like 4,000 employees, this information has been disseminated, and over a period of nearly three years there has not been a death from acute appendicitis.

DR. L. F. BARNEY, Kansas City, Kan.: In the treatment of peritonitis in appendicitis it has been said that enterostomy is one of the most important things. It has been my opinion of recent years that with peritonitis the principal trouble is not the fluid in the peritoneum, but the chief trouble is in the intestine, the intestinal fluids, the ileus, as has been mentioned. There are many who have given up the idea of drainage of the peritoneum, or at least they use it only temporarily. If one will observe the different methods for drainage of the peritoneum, one will find that not one of them is entirely satisfactory. Each man who gets up to discuss the drainage of the peritoneum has his own views, but it is my opinion that it makes little difference how one drains the peritoneum; more important is how one drains the intestine. Of late years I have been using a method which to me is very satisfactory. It is termed continuous gastric lavage. Dr. Leigh has emphasized giving plenty of fluids in the intestinal tract. I agree with him. In the past it has been a custom not to give any fluids, but with the method that I employ it is just the opposite; that is, by the insertion of a nasal tube down into the intestine, and then instead of limiting the fluids, increasing them, giving not quarts but gallons. I have records of patients who have drunk as much as five gallons in twenty-four hours; yes, some of them even six gallons. At first none of that is absorbed. The tube is down in the intestinal tract and it drains out; at first it drains out the fluid mixed with intestinal contents and the first twenty-four hours there is more drainage than the intake by mouth. The second twenty-four hours it will be about equal, and after the second twenty-four hours there begins to be some absorption in the intestinal tract. There is one thing to which I want to call attention, and that is, be sure to give fluids by other routes, too, preferably by venoclysis. One should make sure that these patients are given enough fluids so they are not dehydrated. If they receive plenty of fluid and if the intestinal tract is washed, there will be little trouble. Since I have been using this method my mortality in so-called general peritonitis (I like the term "acute generalizing peritonitis" better) has dropped from 90 per cent to almost nil.

CELIAC DISEASE

ITS SPECIFIC TREATMENT AND CURE WITHOUT NUTRITIONAL RELAPSE

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NEW YORK

It is not generally realized that celiac disease occurs at all ages, although Gee,[1] who first described it, called attention to this fact. It usually occurs before the fifth year, beginning most frequently in the latter half of the first year. The onset is usually so gradual that the date is difficult to set; occasionally it is abrupt. The course is chronic, and there is a marked tendency to relapse. The symptoms are usually characteristic. There is a marked hypotonia. The face is edematous, distressed, pale and emaciated, but is less emaciated than the extremities, which the patient may be unable or disinclined to move. There is great irritability, and usually complete anorexia. The abdomen is very large, protuberant and soft, except when distended by gas. The stools are frequent, large, pale and foul-smelling, rarely watery, and appear to be greater in bulk than can be accounted for by the intake. There is a marked retardation in growth.

Many cases occur in which there is no enlargement of the abdomen, the only symptoms being recurrent attacks of diarrhea, irritability and failure to grow.

PATHOGENESIS

The pathogenesis of celiac disease is still obscure. It has occurred after all kinds of feeding, but is especially likely to follow a heavy carbohydrate diet. There is a constitutional tendency to the disease [2] (table 1). It occurs not infrequently in several members of a family: cases have been reported in twins, in brothers or sisters, in cousins and even among more distant relatives.

Sauer [3] expressed the belief that transmission of the disease from one child to another is possible, and he reported three instances in which this apparently occurred; in each instance the children were related. Against this belief may be cited the infrequency of more than one case of celiac disease in a family at one time, except in the instance of identical twins, and the frequency of its occurrence in various members of a family without contact.

There exists a characteristic intestinal flora, Bacillus bifidus of Tissier,[4] with a persistence of the breast milk flora. Herter believed that B. infantilis was also regularly present, but this has not been confirmed.

At the height of the disease B. coli are vastly diminished in numbers,[5] but as recovery sets in there is a relative decrease in the number of gram-positive bacteria in the feces and a corresponding increase in the gram-negative forms, corresponding to B. coli and B. aerogenes.[4a]

TABLE 1.—*Familial Incidence*

Fanconi	Sisters	2
	Identical twins	2
	Parents, brothers or sisters who suffered from chronic intestinal disturbance	6
Feer	Sisters	2
Halbutzel and Weber	Twins	2
Hess	Sisters	
Lehndorff and Mautner	Cousins Nephews	
Sauer	Cousins	4
	Twins	2
Haas	Sisters (2 pair)	4
	Cousins (5 pair)	10
	Second cousins	4
	Twins, identical (1 pair)	2
	Twins (1 pair)	2
	Uncle	1
Made up as follows:		
Shirley B.	Had an older sister who died from the disease two years before the present patient was born	
Rita G.	Had a cousin five years younger than she	
Mortimer R.	Had a cousin, Robert S.; had a second cousin, Philip R.; had an uncle, Mr. P.	
L. twins (identical)	Both affected	
Vivian K.	Had a cousin, Martin B., two and a half years younger	
Caroline B.	Had a sister three years older	
Eleanore S.	Had a cousin, Eleanore S., five years older	
Marvin L.	Had a cousin, Mary H.	
Sally L.	Had two second cousins, Stuart B. and Ralph B. (brothers)	
Barbara H.	One of twins; the other died before coming under treatment	

PATHOLOGY

There is no pathologic structure in celiac disease. The findings reported by some authors are probably secondary, the result of a complicating avitaminosis.[6] The various digestive organs have been found to be normal; their digestive ferments are active. Although water, fat, carbohydrate, proteins and all salts are absorbed from the intestines in only small amounts,[7] the weight of evidence seems to show the fault to be one of absorption and utilization of carbohydrates, and to a lesser extent of fats. Whether this fault is due to changes in the physicochemical constitution of the intestinal contents, i. e., bacteria, etc.,[8] to disease of the intestinal walls [9] or to some other factor, such as paralysis of the sympathetic,[10] is unknown. In normal

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Read before the Section on Pediatrics at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Gee: On the Celiac Affection, St. Barth. Hosp. Rep. **24:** 17, 1888.

[2] Fanconi, G.: Der intestinale Infantilismus und ähnliche Foremen der chronischen Verdauungstörung: Ihre Behandlung mit Früchten und Gemüsen, Berlin, S. Karger, 1928.

[3] Sauer L. W.: Celiac Disease (Chronic Intestinal Indigestion), Am. J. Dis. Child. **34:** 934 (Dec.) 1927.

[4] (*a*) Herter, C. A.: Infantilism from Chronic Intestinal Infection, New York, The Macmillan Company, 1908. (*b*) Brown, Alan; Courtney, A. M.; Davis, G. A., and MacLachlan, I. F.: Etiology of Chronic Intestinal Indigestion, Am. J. Dis. Child. **30:** 603 (Nov.) 1925. (*c*) Bauer, E. L.: Celiac Disease, Am. J. Dis. Child. **35:** 414 (March) 1928.

[5] Fanconi (footnote 2). Herter (footnote 4*a*).

[6] Schick, B., and Wagner, R.: Atrophia pluriglandularis digestiva, Ztschr. f. Kinderh. **35:** 263 (June) 1923.

[7] Lehndorff, H., and Mautner, H.: Die Coeliakie. Herters intestinaler Infantilismus, Heubners schwere Verdauungsinsuffizienz jenseits des Säuglingsalters, Ergebn. d. inn. Med. u. Kinderh. **31:** 456-593, 1927.

[8] Macrae, O., and Morris, N.: Metabolism Studies in Cœliac Disease, Arch. Dis. Childhood **6:** 75-96 (April) 1931.

[9] Harper, M. H.: Celiac Disease, M. J. Australia **2:** 540-541 (Oct. 18) 1930.

[10] Ederer, S., and Wallerstein, J.: The Specific Dynamic and the Sympathetic Nervous System, Biochem. Ztschr. **206:** 334 (March) 1929.

children, after the ingestion of sugar by mouth, there is a rise in the blood sugar.[11] In celiac disease this rise does not occur, resulting in a flat curve.[12] This flat blood sugar curve has been found by a number of observers,[13] and at least one [8] believes it to be pathognomonic of active celiac disease, and, judged by the blood sugar,[2] there appears to be an interference with the absorption of the monosaccharides.

Poor absorption of fat is an invariable symptom of celiac disease; a much greater amount of fat is thrown out than is ingested, sometimes amounting to double the quantity. This must be explained by the throwing off of large quantities of fat containing epithelium from the intestinal wall.[2]

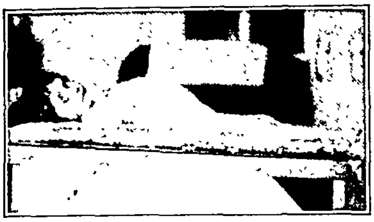

Fig. 1.—S. B., aged 22 months, weighed 13 pounds and 8 ounces (6.1 Kg.) and the height was 71 cm. at the beginning of treatment.

The carbohydrate intolerance is not always complete; some patients recover even though carbohydrate is included in the diet; however, these cases cannot be differentiated. It is this variation in cases which probably accounts for the reports of successful treatment in some instances by methods that permit the use of those carbohydrates shown by almost universal experience to be harmful.

The diet advocated in this paper has been developed gradually through the years.

Gee understood where the fault lay, but had no satisfactory substitutes for the offending foods. Herter experienced the same difficulties, but was able to add gelatin to the list of foods useful in this disease. It was not until Finkelstein [14] devised a method for removing most of the sugar from the milk by the preparation of protein milk that further progress was possible. Howland [15] recognized its value for celiac disease, and advocated a three-phased diet consisting of a first phase (lasting a few weeks), during which only protein milk is used; a second phase (lasting months or years), in which other protein foods are added, and a third phase, in which carbohydrates are added.

Sauer later devised an exceedingly simple and effective methods of applying Howland's scheme of diet, by using powdered protein milk. Although this high protein diet gave satisfactory results, it was a one-sided diet which in some instances required years of abstention from carbohydrates and therefore was not always easily carried out. This fault was removed when I found that ripe bananas were well tolerated in celiac disease [16] and could be used in any required amount. Vegetables and other fruits were included in the diet that I advocated,[16] and Fanconi [2] has since stressed and amply demonstrated their value.

PROGNOSIS

Although patients occasionally recovered completely without any especial assistance, the prognosis was distinctly poor until Howland urged the importance of excluding all carbohydrates from the diet and advised the use of protein milk as the basis of a high protein feeding.

With my finding that the carbohydrate of ripe bananas is tolerated perfectly in this disease, the prognosis was still further improved, so that now, in cases in which the diet can be controlled for a sufficient period, recovery ensues in every instance without nutritional relapse. There have been no reports of patients treated by other methods in whom frequent relapses have not occurred.

TREATMENT

The successful treatment of celiac disease becomes a simple matter if it is borne in mind that carbohydrates—sugar, starches, flour, grains or potatoes—in any of the forms in which they are ordinarily used, such as bread, crackers, zwieback, cereals, puddings, pastries, sweets or dishes that contain them, must be rigorously excluded from the diet; that milk must not be used, and that fats, especially cod liver oil, must be excluded from the diet at the beginning of treatment. However, certain carbohydrates and fats and all proteins can be used in an amount necessary for maintenance and rapid growth.

In the diet for the children with celiac disease studied, each quart of protein milk [17] contained 4 ounces (118.4 cc.) of 20 per cent cream, and as from 1 to 2 quarts (946 to 1,892 cc.) of protein milk was used, there was an intake of from 4 to 8 ounces (118.4 to 236 cc.) of 20 per cent cream daily. This would seem to indicate that the fats are apparently of secondary importance. In only one case was it necessary to eliminate cream from the formula, but this was immediately replaced by an equal value of butter, which was well tolerated.

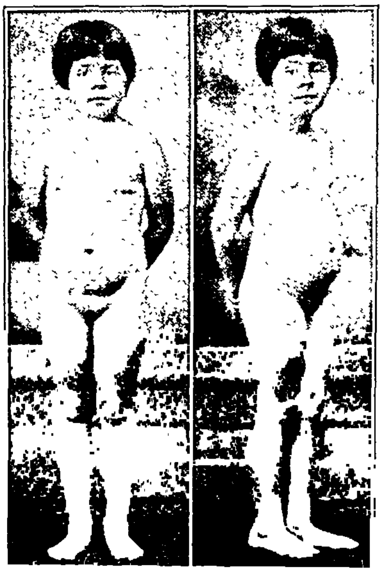

Fig. 2.—S. B., at the age of 5¼ years. She weighed 48 pounds and 8 ounces (22 Kg.) and was 117 cm. tall. She was cured, but the abdomen was still enlarged.

Protein milk prepared by any other method or any of the commercial preparations may be used. In older children it may take two or three days before the protein milk is accepted; if it is then refused, milk prepared with calcium caseinate, although not quite so satisfactory, may be used, and this is invariably taken. To each quart of protein milk is added 3 ounces (85 Gm.) of banana powder. In addition to the protein milk containing the banana powder, ripe bananas are offered at once and may be given in any quantity.[18]

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[11] Tisdall, F. F.; Drake, T. G. H., and Brown, Alan: The Carbohydrate Metabolism of the Normal Infant, Am. J. Dis. Child. **30**: 675 (Nov.) 1925.

[12] MacLean, A. B., and Sullivan, R. C.: Carbohydrate Tolerance in Infants and in Young Children with Celiac Disease, Am. J. Dis. Child. **38**: 16-25 (July) 1929.

[13] Thaysen, T. E. H., and Norgaard, A.: The Regulation of Blood Sugar in Idiopathic Steatorrhea (Sprue and Gee-Herter's Disease), Arch. Int. Med. **44**: 17-28 (July) 1929. Thaysen, T. E. H.: Blood Sugar Regulation in Idiopathic Steatorrhea, ibid. **44**: 477-485 (Oct.) 1929. Svensgaard, Elisabeth: Blood Sugar in Normal and Sick Children, Acta pædiat. (supp. 4) **12**: 1, 1931.

[14] Finkelstein and Meyer: Ueber Eiweissmilch, Jahrb. f. Kinderh. **71**: 525-650 (May) 1910.

[15] Howland, J.: Prolonged Intolerance to Carbohydrates, Tr. Am. Pediat. Soc. **33**: 11, 1921.

[16] Haas, S. V.: The Value of the Banana in the Treatment of Celiac Disease, Am. J. Dis. Child. **28**: 421-437 (Oct.) 1924.

[17] The protein milk was prepared in the following way: One quart each of commercial buttermilk and water is poured into a pot. This mixture is heated to 145 F. and then pushed to the back of the stove or kept over a low flame to maintain this temperature for an hour (an ordinary dairy thermometer is required). One quart and 4 ounces (36 ounces [1,064.5 cc.] of the fluid, which is whey, is removed and discarded. The remaining 28 ounces (828 cc.) of whey and curds is then mashed through a fine sieve. To these 28 ounces of curd is added 4 ounces (118.4 cc.) of 20 per cent cream (or 4 ounces from the top of a bottle of milk), producing 32 ounces (946 cc.) of protein milk.

After the initial anorexia is overcome, the appetite usually becomes voracious, and it is necessary to permit the patient to eat at frequent intervals, day and night.

Table 2.—*Specimen Diet*

Diet of Sally L. First 8 Weeks of Treatment

Kind of Food	October, 1930				November, 1930			
	7*	14	21	28	4	11	18	25
Protein milk, ounces	4	19	29	48	50	40	32	32
Pot cheese, ounces	4	8	7	8	5	8	8	6
Meats, ounces	2	2	3	3	3	3	3	3
Banana powder, ounces	1⅓	1⅓	1⅓	2⅓	4	2⅔	2⅔	2⅔
Egg whites	2	2	2	2	2	2	2	2
Bananas	4	5	9	12	19	17	12	9
Orange	2	2	..	1	..	..	1	1
Apple	½	½	..	.	.	1	..	..
Carrots, teaspoonfuls	1	1	1	2	1	1	2	1
Peas, teaspoonfuls	2	3	4	4	4	3	4	3
String beans, teaspoonfuls	2	1	1	1	4	2	2	2
Spinach, teaspoonfuls	2	1	..	3	4	1	1	1
Celery, portion	1	1	1	1	1	1	1	1
Lettuce, portion	1	1	1	1	1	1	1	1
Oscodal, tablets	3	3	6	6	6	6	6	6
Total calories	1,025	1,433	1,724	2,412	3,037	2,726	2,248	1,930
Calories per pound	(57)	(75)	(82)	(105)	(126)	(113)	(90)	(77)

* Beginning of treatment.

This period, however, lasts only from four to eight weeks, when the body cells, after their long deprivation, apparently become appeased, the voracious appetite diminishes, and the patient can be put on the customary three or four hour schedule. During this period there have been added to the diet beef juice or meat for the older children, cottage cheese, white of egg, orange juice or other fruits and vegetables, which must be introduced carefully, one at a time, potatoes excepted (table 2).

Owing to the large food intake, a full dose of castor oil should be given once a week, the interval being gradually increased to once a month. Vitamin D is given early, but not in the form of cod liver oil, which usually causes trouble. For severe secondary anemia, iron should be given. The diet, then, at the end of from four to eight weeks, consists of:

Protein milk,	32-64 ounces (946-1,892 cc.)
Banana powder,	3- 6 ounces (85-170 Gm.)
Bananas,	1- 6, or more
Cottage cheese, ad lib.	
Beef juice	
Meat	
Fruit juices or fruits	
Vegetables	
Cod liver oil concentrate,[19] or viosterol	
Iron	

This forms a complete maximum diet, and it will be found that the quantities usually taken furnish between 80 and 100 calories per pound. The stools with this diet are fairly large, formed and from 2 to 4 daily. Should a relapse occur during the use of this diet, in the absence of an acute infection, it is certain that some carbohydrate is being used other than that which is allowed. An unbelievably small amount of improper carbohydrate, such as a bit of bread crust daily, may bring about a relapse; this fact has also been reported by others.[2]

The diet must be continued for a long time, preferably a year. However, after six months an attempt may be made to introduce some form of forbidden carbohydrate, such as in bread or cereal; one is selected, and a small amount is allowed daily, with no other change for at least three months; then if no relapse has occurred another addition may be made, i. e., milk, 16 ounces (473 cc.) daily, for another three month period, and so on until a normal diet is used.

If, however, the time has not arrived when these foods can be borne, anorexia, frequent loose stools and retardation of growth ensue and if the offending substances are not at once omitted from the diet, the celiac state may return in full force. It should never be forgotten that there is a low tolerance for carbohydrates in these cases, and therefore sweets and sugars should always be used sparingly.

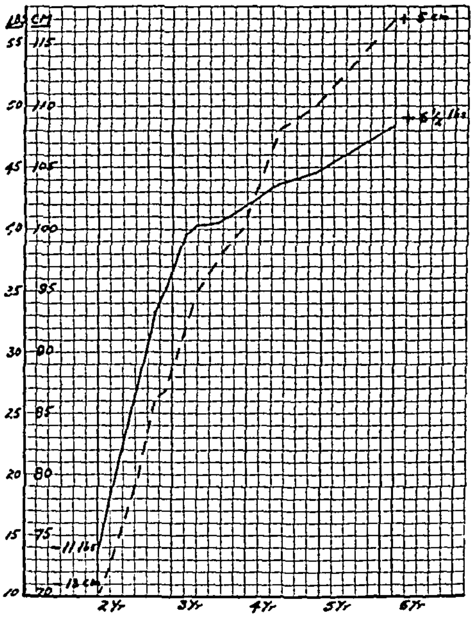

Fig. 3.—Shirley, B., aged 22 months, weighed 13½ pounds and was 71 cm. tall. The abdomen was large; edema and paresis of the lower extremities were present. The hemoglobin was 35 per cent. In twelve months she gained 24 pounds (10.9 Kg.) and grew 19 cm. An older sister died of celiac disease two years before the patient was born. The flattening of the curve at 3 years was the result of pertussis and a trial of whole milk. She is now on a full diet.

COMMENT

Increase in length is of much greater importance than gain in weight in celiac disease, and no treatment that fails to produce normal growth in length can be considered satisfactory.

An avitaminosis is present in all long-standing cases.[6] Symptoms of beriberi [20] are more frequent than those of scurvy, and the photophobia that occasionally exists is probably a xerophthalmia.

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[18] The relative values of ripe bananas and ripe banana powder are as follows:

Ripe Bananas

	Gm. or Cc.
Water	75.30
Ash	0.85
Fat	0.60
Protein	1.30
Cellulose	0.81
Carbohydrate	22.00
(Sugars 19.85)	
Invert sugar	7.00
Sucrose	11.00
Calories per ounce	30

Ripe Banana Powder

	Gm. or Cc.
Moisture	2.50
Ash	3.18
Fat	1.50
Protein	4.86
Crude fiber, cellulose	3.25
Nitrogen-free extract	84.71
As:	
Invert sugar	32.65
Sucrose	33.18
Dextrin	9.60
Starch	7.80
Gums and undetermined ingredient.	1.48
	84.71
Calories per ounce	110

[19] In these cases oscodal was usually used, as it was the first cod liver oil substitute available, but occasionally the sugar coating of the tablet proved harmful.

[20] Haas, S. V.: Beriberi in Late Infancy: Result of Celiac Disease, Arch. Pediat. 46: 467-478 (Aug.) 1929.

In all cases of celiac disease, ripe bananas are tolerated perfectly, and ripe banana powder has simplified their use. The terms ripe banana and ripe banana powder are used interchangeably as they are identical qualitatively, although they vary in some degree quantitatively. Among the properties peculiar to the banana which probably account for their action in celiac disease is the power to hydrolize starch and to convert cane sugar into invert sugar through the action of an enzyme. Ripe banana powder changes the intestinal flora of normal infants from a gram-negative to a gram-positive aciduric type, having the same effect as acidophilus milk. Bananas contain all vitamins in adequate amount, excepting D.[21]

Table 3.—*Cases*

	Beginning of Treatment			When Last Seen		
Name	Age	Weight, Lbs.	Height, Cm.	Age	Weight, Lbs.	Height, Cm.
Sally L.........	28 mo.	— 9	— 6	3 yr. 9 mo.	+ 5	+ 3
Shirley B........	22 mo.	—10	— 9	5 yr. 10 mo.	+ 5	+ 3
Robert O'K.....	24 mo.	— 6	— 4	4 yr. 8 mo.	+ 4	+ 5
Paul K..........	3 yr.	Normal	+ 3	5 yr. 7 mo.	+ 7	+10
Lawrence L.....	3 yr. 3 mo.	— 9	— 7	5 yr. 6 mo.	+ 8	+ 2
Helene B........	2 yr.	— 3	— 6	5 yr. 4 mo.	+15	+ 8
Anita B.........	5 yr. 8 mo.	— 1	+ 7	6 yr. 3 mo.	+16	+20
Edward R.......	11½ mo.	— 4	— 2	25½ mo.	+ 4	+ 2
Harold H.......	11 mo.	— 4	Normal	5 yr.	+ 7	+12
Kenneth F......	2 yr. 4 mo.	— 6	— 6	4 yr. 11 mo.	+ 6	+ 5
Pearl G.........	9 yr. 6 mo.	—10	— 7	10 yr. 10 mo.	Normal	+ 4
Vivian K........	3 mo.	— 3	— 4	2 yr.	+ 3	+ 3
Ruth S..........	5 yr. 9 mo.	—13	—19	11 yr.	+14	+10
Martin L. (twin)	10 mo.	— 5	— 4	3 yr. 2 mo.	+ 1	+10
Marvin L.......	11 mo.	— 1	— 3	2 yr. 5 mo.	+ 3	+ 2
Everett S.......	1 yr.	— 2	+ 2	2 yr. 6 mo.	+ 3	+ 6
Werner W.......	3 mo.	— 3	— 2	22½ mo.	+ 1	+ 3
Richard C.......	2 yr. 6 mo.	— 1	+ 3	4 yr.	+ 1	+ 7
Alan G..........	2 yr. 6 mo.	+ 4	+ 4	3 yr. 2 mo.	+ 5	+ 5
Pearl J..........	4 mo.	— 1	Normal	3 yr. 6 mo.	+ 5	+ 5
Margot K.......	9 mo.	Normal	— 2	5 yr. 3 mo.	+ 4	+ 2
Helene L........	11½ mo.	— 4	— 2	6 yr. 8 mo.	+12	+ 8
Gloria H........	2 yr. 7 mo.	— 6	— 3	6 yr.	+ 1	+ 2
Helene M........	4½ mo.	— 1	— 5	15 mo.	+ 1	+ 3
Lila S...........	8½ mo.	Normal	Normal	2 yr. 8 mo.	+ 1	+ 4
Rose S...........	3 yr. 6 mo.	Normal	Normal	5 yr. 6 mo.	+ 9	Normal
Howard S.......	10¾ mo.	+ 2	Normal	13 mo.	+ 2	+ 2
Barbara D......	3 yr. 6 mo.	Normal	Normal	3 yr. 7 mo.	+ 1	+ 3
Elaine F........	6 wk.	— 1	+ 1	5 yr.	+19	—12
Robert S........	2 yr.	Normal	— 4	6 yr. 7 mo.	+ 1	+ 1
Philip R.........	6 mo.	— 1	— 1	10 mo.	+ 1	+ 1
Elaine K........	17 mo.	— 5	— 4	6 yr. 4 mo.	Normal	+11
George H.......	6 mo.	Normal	Normal	9¾ mo.	Normal	+ 3
Barbara H......	14 wk.	— 5	— 7	2 yr. 4 mo.	Normal	+ 3
Patricia G......	6 mo.	— 1	+ 3	7½ mo.	Normal	+ 6
Norman K......	17 mo.	— 2	Normal	3 yr. 6 mo.	Normal	+ 3
Alan H..........	10 mo.	— 2	— 3	3 yr. 2 mo.	Normal	+ 4
Roseann F......	10½ mo.	— 6	— 8	3 yr.	+½	Normal
Howard E......	3 yr.	— 4	Normal	6 yr.	Normal	Normal
Joyce O.........	6¾ mo.	— 1	— 1	2 yr. 7 mo.	— 2	+ 4
Margot G.......	7 mo.	— 4	+ 4	2 yr. 6 mo.	— 3	+ 4
Eleanore S......	4 yr. 8 mo.	Normal	— 3	5 yr. 6 mo.	+ 1	— 2
Anita R.*.......	4½ mo.	— 2	— 1	5 yr.	— 4	— 1
Jerome L. (twin)	10 mo.	— 4	— 2	2 yr. 8 mo.	— 2	+ 8
Irma F. †.......	20 mo.	— 3	?	9 yr. 6 mo.	— 6	— 2
Nathan S. *.....	10 mo.	— 7	?	9 yr. 2 mo.	—18	— 9
Stanley F.......	7 mo.	Normal	Normal	2 yr. 5 mo.	— 1	Normal
Martin L........	14 mo.	— 8	— 4	17 mo.	— 1	Normal
Arlene H........	15 mo.	— 4	— 2	5 yr.	— 1	Normal
Samuel J. §.....	28 mo.	— 8	— 8	5 yr. 3 mo.	— 6	— 3
Winifred P......	9 mo.	— 2	— 2	16½ mo.	— 2	— 1
Leo K. #........	3 yr. 11 mo.	—14	—18	6 yr. 5 mo.	— 9	—10
Edward G. ¶....	16½ mo.	— 8	Normal			

* Neglected diet.
† Mental retardation; chronic otorrhea.
§ Interrupted diet.
# Boarded out.
¶ Hospitalized; gained 1½ pounds first week; influenza infection; bronchopneumonia; died 13 days after coming under treatment.

In celiac disease, when fructose is used in equal amounts with dextrose, a normal blood sugar curve results, whereas other sugars produce a flat blood sugar curve, which may explain the good results of banana feeding in this disease.[12]

Bananas do not produce intestinal fermentation, and unlike other fruits or sugars they may be taken in any amount without producing loose stools. In marked cases of celiac disease no other pure carbohydrate can be used without eventually producing symptoms of carbohydrate intolerance. When bananas are fed in large amounts to patients with celiac disease, the stools give no iodine reaction for starch.

When the mixed fecal flora from a case of infantilism are inoculated into sugar-bouillon fermentation tubes (lactose, dextrose, saccharose), the bifid organisms grow better in dextrose and lactose than they do in saccharose.[4a]

A decrease in urinary acidity is a definite effect of the intake of banana, and may also help to explain the value of banana in chronic intestinal indigestion.[22]

The present status of eight patients whose cases were reported in 1924[16] is as follows: Five are above average height, two are average height, and one not under observation is reported to be normal. The weights are much above the average for all except two, who are below the average. All are taking what is practically a normal diet.

This study is based on experience with seventy-five cases; the patients seen in consultation and in institutional practice and the cases previously reported have been omitted from this report (table 3).

SUMMARY

There are a constitutional tendency to the disease and a characteristic intestinal flora.

There appear to be a faulty absorption and utilization of carbohydrates and fats. The fats are of secondary importance, for if strict attention is paid to the carbohydrate intake, tolerance for fats follows.

A flat blood sugar curve is perhaps pathognomonic of active celiac disease.

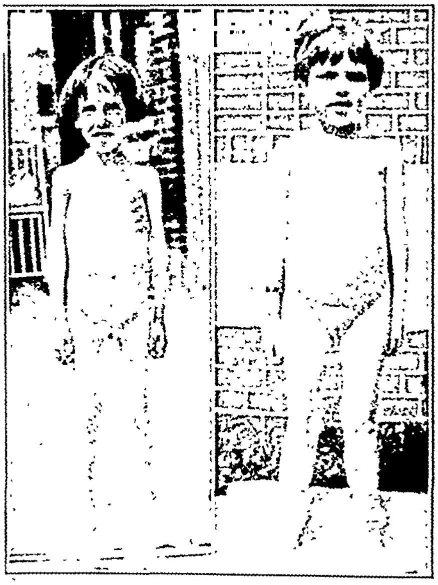

Fig. 4.—R. B. was an institutional child (not included in the list of cases). The illustrations show the rapidity of change in this disease on a celiac diet. The picture on the left shows the child at the age of 7 years and 7 months; that on the right, at the age of 7 years and 10 months.

The successful treatment of celiac disease requires a high protein diet, of which the basis is protein milk, to which is added carbohydrate in the form of ripe banana powder and ripe banana; other fruits and some vegetables are tolerated to a degree. No nutritional relapse occurs with this diet.

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[21] Eddy, W. H., and Kellogg, M.: The Place of the Banana in the Diet, Am. J. Pub. Health **17**: 27-35 (Jan.) 1927.

[22] Brown, A., and Courtney, A. M.: The Effect on Digestion and Assimilation of Including Bananas in the Mixed Diets of Some Children Over 5 Years of Age, Canad. M. A. J. **21**: 37 (July) 1929.

A relapse not due to an acute infection is always due to the introduction of some carbohydrate other than that of banana, or rarely some untolerated fat.

The banana contains all vitamins except D, hydrolyzes starch, transforms the intestinal flora and produces starch-free alkaline stools.

Vitamin D must be used as the concentrate, or viosterol, and not as cod liver oil, and for anemia some form of iron must be given.

The prognosis in cases of celiac disease under this treatment is excellent; the patients attain full stature and are capable of using a normal diet.

336 West Eighty-Eighth Street.

ABSTRACT OF DISCUSSION

Dr. John Signorelli, New Orleans: Celiac disease is not seen in New Orleans as often as it is reported elsewhere. We do not see the number of cases in the advanced stage that we read about. From a clinical standpoint this disease is first seen by us at various stages of development, and is not diagnosed as celiac disease but rather as a chronic intestinal indigestion, which in the latter stages might be diagnosed as celiac disease. My experience in the treatment of this condition coincides with that of every one else. In young children I follow the method that calls for a strict diet, either protein milk or protein products, to which carbohydrates are added carefully after improvement. The only carbohydrate that gives satisfactory results is that of ripe banana. I have never given such large quantities of banana as Dr. Haas. In older children I have had satisfactory results by giving other carbohydrates, as cauliflower, string beans and squash. The tone of the musculature is increased by the routine use of hydrotherapy, which tends to build up the patient's resistance. Iron is useful and satisfactory and I utilize the form of iron and ammonium citrate. I feel convinced, however, that the most satisfactory drug is nux vomica. One should give it in moderate doses at the beginning, increasing steadily but gradually until what might be called the point of physiologic action is reached. This drug maintains the appetite and overcomes constipation, besides improving the general condition. Another adjunct to the treatment in these cases is the use of the ultraviolet ray, since it is difficult to introduce a sufficient amount of vitamin D, because, as Dr. Haas has pointed out, all foods that contain this element are distinctly contraindicated in these cases. Viosterol also can be given with good results. For constipation, in young children, I have had satisfactory results by giving, at the start, a combination of sodium phosphate and ammonium chloride. This is continued until the number of stools maintains elimination but is not sufficient to deplete the general system. At this point it is discontinued and nux vomica is introduced.

Dr. John L. Morse, Boston: The definition in the dictionary of "celiac" is "pertaining to the abdomen or the cavity of the abdomen." I don't think there is any such disease as celiac disease. There is a symptom complex to which this name has been applied. This symptom complex may be due to a variety of causes. It is simply a peculiar type of disturbance of digestion. In the past, when this name was first used, the trouble was mostly with the fats; now it is mostly with the starches. I agree with Dr. Haas that cases are seen in which the abdomen is not large. These are the early cases. There must be all stages from the normal child to the well developed celiac disease, so called, only there is failure to recognize the early stages. Dr. Haas says that there is a characteristic intestinal flora. I don't think that this is true. The work of Brown and his collaborators at Toronto shows definitely that there isn't a characteristic intestinal flora. I think that if one will go back to Kendall's work one will find the explanation, namely, that the bacteria in the intestine vary with the food that is put into it. In those cases in which there is an intolerance for starch one finds iodophilic bacteria, and the condition persists until they are gone. Dr. Haas says there is a flattening of the blood sugar curve. Svensgaard said that first. Jensen a few years later found the same flattening in all children with disturbances of nutrition. Lehndorff and Mautner also found that there was no characteristic curve. I agree that the diet should be high in protein and contain a minimum amount of fat and no starch. I do not agree in believing that there is anything especially useful in protein milk. I think that it simply provides a large amount of protein in an easily digestible form. Any protein that answers these specifications will do as well. I agree with the author to a certain extent that ripe bananas and ripe banana powder are well tolerated in this symptom complex. I think everybody would have to agree with that, but I don't think that his arguments as to why they agree are very satisfactory. There is a certain amount of evidence to show that the curve of the absorption of levulose is more nearly normal than the curve for the absorption of dextrose. On that basis, perhaps, one can say that the levulose in bananas would be of use. Can some other sugar be substituted for levulose? Nelson substituted dextrose in increasing amounts for bananas. She gave as much as 200 Gm. of dextrose daily between meals. Diarrhea did not develop and the weight gain was accelerated. The number and the bulk of the stools were decreased.

Dr. Charles G. Kerley, New York: A patient with celiac disease represents an infant whose gastro-intestinal function is held temporarily in abeyance with the exception of a limited capacity for animal protein and certain carbohydrates. With regard to the management, all agree that fresh cow's milk is to be omitted. A dried milk product, fat free, or one of the dried protein milks furnishes the best substitute. In addition to this, banana powder or overripe banana supplies the dietetic fundamentals. We are indebted to Dr. Haas for suggesting the use of banana and banana products in these cases. My cases of celiac disease are on the increase, owing, I believe, to the prevailing habit of advanced feeding with vegetables, meats and fruits to those of very tender age. The majority of my patients come from well-to-do families; the patient is the overfed only child. In accepting the celiac patient I invariably insist that the family discontinue weighing the child and advise that, while a favorable outlook is probable, the convalescence *will* be tedious.

Dr. Sidney V. Haas, New York: Dr. Signorelli brought up the question of drugs. I do not think it is really necessary to use any drug excepting iron, the form of which is unimportant. Gastro-intestinal medication or laxatives are not required. The only reason for using castor oil at intervals is the extremely large amount of food taken by these children. I think Dr. Morse is right in saying there is no such thing as celiac disease; but since there is no better term for the condition in the present state of knowledge, it will be necessary to continue to speak of it as celiac disease. He is wrong, however, when he says there is no characteristic intestinal flora and that Brown and his co-workers in Toronto disproved it. As a matter of fact, Herter first described the presence of Bacillus bifidus in these cases, and Brown, Courtney, Davis and MacLachlan were able to substantiate his observations. The flat blood sugar curve was first reported by McLean and Sullivan; since then it has been reported by Svensgaard, several English authors and four or five others. The flat blood sugar curve should be looked for; whether it will stand the test of time remains to be seen. Protein milk is of course not a specific; calcium caseinate milk is a satisfactory form of milk and replaces it among older children who refuse the former. So far as the value of the banana sugar is concerned, it is found that the sugar in the banana powder, which is four times the strength of the banana, is 32 per cent invert sugar, about 33 per cent saccharose, about 9 per cent dextrin and about 7 per cent starch. So most of it is sugar and only a *little* of it is starch. The work of Nelson has always puzzled me; her published data are inadequate. She used a solution of dextrose at frequent intervals between meals. Apparently her results were satisfactory; but all I can say is that, in practice, dextrose as ordinarily used produces a relapse with great regularity. Dr. Kerley's experience of finding it necessary to tell patients not to expect a gain in weight in the beginning I think can now be changed; an immediate gain in weight may be expected. The celiac diet as outlined can be used at once and freely, and it is easily tolerated. Years ago when I first began to use this method I was fearful and moved slowly and only gradually increased the food; but not now, with the result that gain occurs from the beginning of treatment.

SEVERE BRONCHIAL ASTHMA APPARENTLY DUE TO FUNGUS SPORES FOUND IN MAPLE BARK

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Within the past few years it has been definitely demonstrated that asthmatic conditions may be caused not only by pollens, horse hair, dander, etc., but also by any particular protein substances that may be inhaled and undergo parenteral absorption. Not the least important of these foreign proteins are those due to the spores of fungi. While it has long been recognized that fungi may cause pathologic conditions in the lungs, still the literature is relatively meager as regards the part played by their spores alone.

Recently Castellani, Stoval, Reich and Fox have stressed the clinical importance of mycology as applied to clinical medicine, but the allergic aspect of the subject has not been especially emphasized by these men.

While asthma itself as caused from the inhalation of animal proteins (horse asthma, pollen asthma, hay fever) is an old subject, the allergic aspect is of relatively recent origin. Especially is this true of the allergic properties of the various dusts. Cooke,[1] in 1922, showed that 109 of 327 asthmatic patients reacted positively to house dust. He found that the irritating properties were destroyed by heat. McLaughlin,[2] in 1924, found that 126 of 1,186 reacted to dust alone, the cause of which he attributed to cat hair, dander, orris, glue, etc. Storm van Leeuwen,[3] in 1925, described experimental asthma in guinea-pigs due to fungi. Figley and Elrod,[4] Ratner and Gruehl,[5] and others have described an asthma caused by the inhalation of castor bean dust. Markin [6] has described a sensitization caused by a protein found in boxwood.

It was Cadham [7] of the University of Manitoba, in 1924, however, who was the first to describe a definite spore asthma in human beings. He reported the cases of three harvest hands working in rust-infected wheat fields who were sensitized by the spores of wheat rust (Puccinia graminis). He was able to produce paroxysms of asthma in these patients by causing them to inhale the spores. One of his patients who became sensitized in 1916 served overseas, and on his return immediately became reinfected in working in the rust-infested fields. Hansen,[8] in 1928, described a series of cases in which asthma could be incited by spores of yeast and mold cultures grown from the surroundings of the patients. He also obtained reactions from extracts of fungus spores. Hopkins, Benham and Kesten,[9] in 1930, described a case of asthma due to Alternaria; Bernton,[10] in 1930, 1 due to Aspergillus fumigatus, and Flood,[11] recently, 1 due to Mucor plumbus.

This brief review seems to show that the spores of fungi are not different from other proteins in producing sensitization.

In the past year our interest has been attracted to this field because we have had occasion to examine a comparatively large group of men presenting asthmatic symptoms in whom we think that we have quite definitely established a fungus spore as the etiologic factor, acting apparently as a sensitizing antigen rather than as a parasitic infection. Between June and October, 1931, 10 employees of a railway tie plant presented themselves for examination. The histories of all these men were similar. Owing to economic conditions, the tie plant did not operate during the winter months of 1930 and 1931. Operation was resumed March 2, 1931. These men reported that they were in good physical condition on resuming their work in the spring of 1931, and in none of them was a history offered of ever having had previous attacks of asthma. These patients began to have pulmonary symptoms at various intervals between April and August, 1931. A large number dated the onset of their symptoms between May 1 and June 15. There were only 2 or 3 who dated their onset at a later date and none after August 21. The onset was fairly acute, beginning with cough and expectoration. This was followed in a day or so by shortness of breath, which in all of our cases was the predominating symptom. The cough and shortness of breath grew progressively worse as the men tried to continue at their work. In a large percentage of the cases there was a history of night sweats and substernal pain. A rise in temperature was reported by some at the onset, but no fever was found in any of this group at the time they presented themselves for examination. Weight losses were quite general and ran as high as 24 pounds (10.9 Kg.) in a month. The patients we were fortunate enough to see in the acute stage presented typical asthmatic symptoms of varying degrees.

They presented definite roentgen findings, proportionate to the degree of dyspnea present. In the severest cases there was a mottling throughout the lower half of the lungs, and in every one there was an increase in the hilus, basal and trunk shadows. There was a definite increase in the peribronchial markings throughout both lungs with the exception of the apexes. With only one or two exceptions there was practically no involvement above the second rib. The mottled basal lesions were similar in many respects to those seen in pneumonoconiosis. The parenchymatous lesion is of a soft, partially diffuse, irregular density, from 3 to 5 mm. in diameter, increasing in size and density toward the hilus. The lesion is quite faint and lacks the discrete border ordinarily seen in nodular lesions. The lesions are suggestive of small, localized, bronchopneumonic infiltrations.

Of the 10 patients seen in this group, 8 were bark peelers and the remaining 2 shoveled away the bark as it was taken from the ties. At this time there were probably 200 men employed in the various operations

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Read before the Section on Practice of Medicine at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

[1] Cooke, R. A.: J. Immunol. **7:** 147 (March) 1922.

[2] McLaughlin, J. S.: Skin Tests in Patients with Asthma, J. A. M. A. **89:** 863 (Sept. 10) 1927.

[3] Storm van Leeuwen, W.: Allergic Diseases, Philadelphia, J. B. Lippincott Company, 1925, p. 58.

[4] Figley, K. D., and Elrod, R. H.: Endemic Asthma Due to Castor Bean Dust, J. A. M. A. **90:** 79 (Jan. 14) 1928.

[5] Ratner, B., and Gruehl, H. L.: Am. J. Hyg. **10:** 236 (July) 1929.

[6] Markin, L. E.: J. Allergy **1:** 346 (May) 1930.

[7] Cadham, F. T.: Asthma Due to Grain Dusts, J. A. M. A. **83:** 27 (July 5) 1924.

[8] Hansen, Karl: Verhandl. d. deutsch. Gesellsch. f. inn. Med. **40:** 204, 1928.

[9] Hopkins, J. G.; Benham, R. W., and Kesten, B. M.: Asthma Due to a Fungus—Alternaria, J. A. M. A. **94:** 6 (Jan. 4) 1930.

[10] Bernton, H. S.: Asthma Due to a Mold—Aspergillus Fumigatus, J. A. M. A. **95:** 189 (July 19) 1930.

[11] Flood, C. A.: Observations on Sensitivity to Dust Fungi in Patients with Asthma, J. A. M. A. **96:** 2094 (June 20) 1931.

in this tie-treating plant, but we have no record of any case of asthma occurring in men other than those whose work brought them into direct contact with the bark dust.

Naturally, after seeing several of these cases originating in one particular industry, our interest was aroused for an investigation of the probable cause. We found that 75 per cent of the wood being operated was maple, and furthermore that in most of the maple ties there was a black dust of the consistency of lampblack beneath the cork layer of the bark.

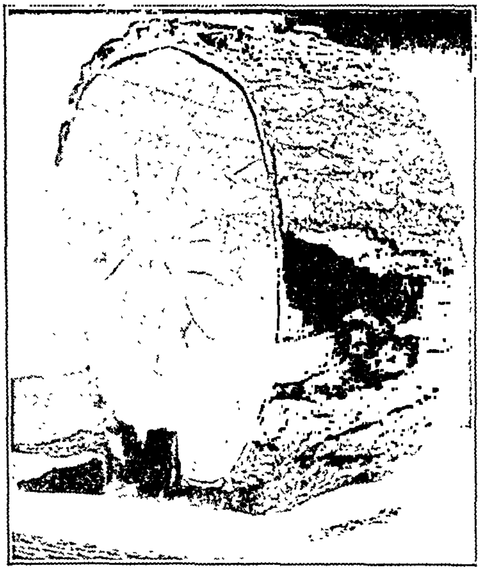

Fig. 1.—Cross-section of a maple log, showing the black dust beneath the cork layer.

The bark is removed from these ties by means of draw knives, which necessarily agitates the dust and compels the men to inhale it in their operations.

In October, 1931, the tie plant employing these men ceased operation owing to economic conditions, and no more patients were seen from this particular industry. Those previously examined showed improvement, and x-ray pictures revealed a marked clearing at a later date.

About this time similar conditions began to occur in an automobile body plant in this locality. Conditions similar in every respect to those we had previously been studying were found, and on investigation the infected group, consisting of 36 patients, was found to be among the sawmill employees. Investigation further revealed the fact that about 75 per cent of the logs were maple, and examination showed a dust similar to that found in the ties. At the time, this plant was operating only two or three days a week, so that the affected men had several days to recuperate each week, but on resuming their work the symptoms were immediately aggravated. The symptoms immediately showed improvement when the men were removed from the environment of the sawmill.

An examination of the dust taken from maple logs showed it to be pure spores of a fungus. This fungus has been tentatively classified as the conidial stage of some species of Nummularia. Dr. Thom, Principal Mycologist of the Bureau of Chemistry and Soils at Washington, states that it is a form known as Coniosporium corticola. As a result of experiments on animals it was difficult to correlate clinically the fungus infection with the symptoms presented. The acute onset and the prompt recovery on removal from the environment suggested to us that we were probably dealing with an allergic condition combined with a toxic property in the dust, somewhat similar in action to the asthmatic condition produced by the castor bean dust. Accordingly, our work was directed along these lines, and it correlated our previous findings. Extracts were made from the spores, and injections into the infected group proved to be positive as compared to injections of milk. A suspension was also made of macerated spores, and this likewise gave positive skin reactions as compared to a suspension of flour dust. Five employees in the sawmill, not presenting asthmatic symptoms, were used as controls. These men also showed positive reactions to the extract and to the suspension of macerated spores, but it is possible, and most likely probable, that they may have become sufficiently allergic to produce reactions. Six employees of a sanatorium (of Powers, Mich.) gave negative reactions to both the extract and the suspension of spore dust, as compared with the reactions of the infected group.

The condition may easily be confused with tuberculosis, particularly when there is definite mottling throughout the lungs, with a history of cough, night sweats, loss of weight, rise in temperature, etc. The negative sputum and history of contact, with the improvement of the patient on removing him from the environment of the spore dust, are the deciding factors.

REPORT OF CASES

CASE 13.—*History.*—A white man, aged 28, had a family history that was negative for tuberculosis. He had had influenza in 1918, with satisfactory recovery. He had had an appendectomy eight years before examination. Otherwise, he had always been well, up to three weeks prior to examination, when a severe bronchitis developed.

The patient had been a bark peeler in a railway tie plant for the past four years. During the winter months of 1930 and 1931, the plant closed down and he was out of work, but he resumed his work as bark peeler the early part of March, 1931. At this time he felt perfectly well, but about June 1, a cough developed. This was accompanied by a slight amount of sputum. The cough was most pronounced on arising in the morning. Within a few days after the onset of the cough he began to notice shortness of breath. The cough and shortness of breath became progressively worse. He lost 15 pounds (6.8 Kg.) in the twenty-four days previous to examination. He had no night sweats or substernal pain.

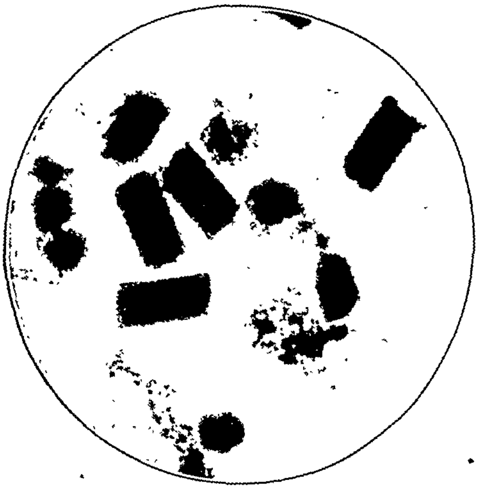

Fig. 2.—A magnification of the black sediment in figure 1, showing cylindric bodies containing numerous spores with many free spores. Reduced from a magnification of 400 diameters.

Physical Examination.—The temperature was 98.4 F., the pulse rate, 92. The patient was well developed and well nourished. The lips were somewhat cyanotic, and he had the general appearance of being moderately asthmatic. The heart rate was rapid, but otherwise the heart was normal. There were coarse râles in the lower portion of both lungs. These râles extended from the lower angle of the scapula, posteriorly, and the fourth rib, anteriorly, to the base. There were also râles in the lower part of the axilla.

Roentgen Examination.—There was a marked increase in the hilus shadows of both sides, with a general increase in the lung markings on the right side below the second rib, most marked in the base, where it assumed a mottled appearance. On the left side, there was a general increase in the lung markings below the third rib, with a tendency toward mottling in the base. There was a general increase in the trunk shadows extending to the base of the lungs on both sides. The condition was quite equally distributed on both sides, with an increase in the density from the parenchyma of the lung toward the hilus. The apexes were clear. The diaphragm was normal in appearance. The heart was normal in size. A tentative diagnosis of suspicious tuberculosis was made, and the patient was advised to enter the sanatorium for observation.

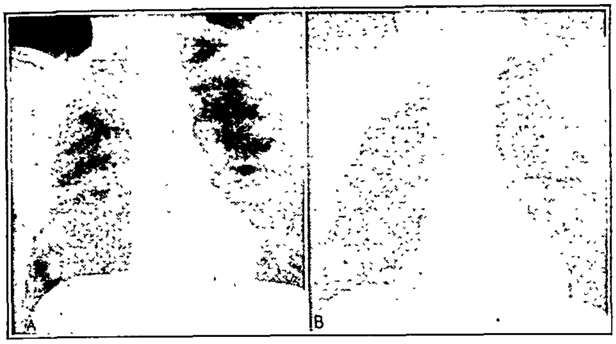

Fig. 3 (case 5).—The patient was a sawmill slasherman. *A,* roentgenogram taken on Nov. 24, 1931. The patient was definitely asthmatic. He worked as a watchman for five weeks prior to the time the picture was taken, with practically no improvement. His work as watchman brought him in contact with the spore dust when making rounds in the mill. *B,* roentgenogram taken on Jan. 31, 1932. Following examination on November 24, the patient was transferred to the salvage department, which removed him entirely from the environment of the spore dust; he dated his improvement from that time.

Course.—July 21, 1931: Following examination on June 24, the patient returned to his work as a bark peeler, where he continued until July 11, at which time the shortness of breath became so marked that it was impossible for him to continue. Since quitting work on July 11 he had gained 10 pounds (4.5 Kg.) and his shortness of breath had improved markedly.

Physical examination: On this date, examination showed a marked clearing of the râles that were present on June 24, and the patient did not present the definite asthmatic appearance that he did on that date. He was again advised to enter the sanatorium for observation, and was admitted on July 28; he remained there until August 21. During his stay in the hospital he gained 4 pounds (1.8 Kg.) and had no fever, and his pulse rate ranged from 64 to 80. When discharged he still had some cough with a slight amount of mucoid sputum. He showed only a slight amount of dyspnea on exertion.

Laboratory examination: Examinations of the sputum were negative for tubercle bacilli, including guinea-pig inoculation. Cultures were positive for Monilia. A Kahn reaction of the blood was negative. The urine was negative for albumin and sugar.

Oct. 29, 1931: Following discharge on October 1, the patient returned to his work, where he continued for four days. During the first two days of work, the men worked entirely on oak ties. The patient felt no ill effects during this time. On the third and fourth days, they peeled the bark from maple ties, and his old symptoms recurred to such an extent that he was again forced to stop work. His symptoms improved as soon as he left this environment. He had done no further work since that time. He still had some dyspnea and considerable cough, particularly in the morning, at which time he raised a clear frothy sputum.

Physical examination: The temperature was 98 F., the pulse rate, 92. There was some accentuation of breath sounds in the right apex, anteriorly, with a bronchovesicular type of breathing at the costosternal junction of the third rib, anteriorly. There were a few fine râles in the lower part of the axilla below the angle of the scapula, posteriorly, on both sides.

Jan. 26, 1932: The patient had not worked since October, 1931. He had gained some weight during the past three months and was practically free from dyspnea. He still had a slight cough, but otherwise his appearance was healthy. He continued to show a few fine râles in the base of the left lung, posteriorly, after expiratory cough. A roentgenogram of his chest taken at this time showed the clearing practically complete. On this date he was given 0.005 cc. of spore extract, intradermally. This produced a definite wheal about 10 mm. wide with an areola 2 cm. wide, as compared with that produced by a control injection of sterile milk, which was about 3 mm. wide. A scratch test was done with a suspension of spore dust. This also produced a definite wheal; a control test with a suspension of flour gave negative results.

Case 14.—*History.*—A white man, aged 44, had a family history that was negative for tuberculosis. He had had rheumatism twenty-one years previously, at which time he was in bed for one and one-half years. Aside from this he had always been well.

For the past four years the patient had been a bark peeler in a tie plant. He did not work during the winter months of 1930 and 1931, as the plant was closed. He resumed work on April 1, 1931.

At the time the patient resumed his work as a bark peeler he felt perfectly well. About May 1 he started coughing, which was followed within a few days by shortness of breath. The paroxysms of coughing became extremely severe. He raised about 4 ounces (118.4 cc.) of white, frothy sputum per day. He lost 20 pounds (9 Kg.) between April and June 25. His coughing became so severe that he was forced to stop work about June 20.

Physical Examination.—The temperature was 98 F., the pulse rate, 80. The patient was well developed, but a little undernourished. He presented the appearance of a patient with asthma of a moderate degree. His lips were cyanotic; he was extremely dyspneic, particularly after climbing stairs. He appeared sick and looked to be ten years older than the age he gave. The heart was normal. The respiratory movements were shallow and increased somewhat as to rate. There were coarse dry râles in the lower portion of both lungs, extending to the lower angle of the scapulae, posteriorly, and the fourth rib, anteriorly. The blood pressure was 120 systolic and 80 diastolic.

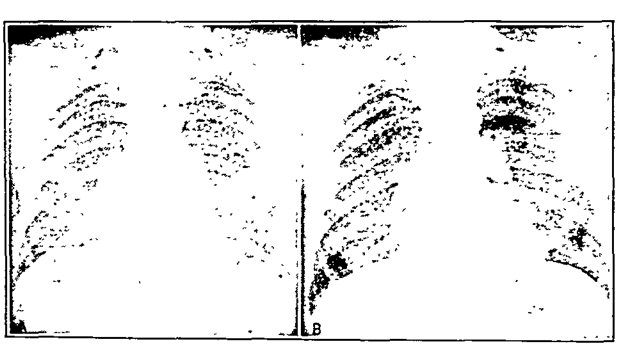

Fig. 4 (case 9).—The patient was a sawmill edgerman. *A,* roentgenogram taken on Jan. 9, 1932. He was forced to stop work on Dec. 18, 1931, on account of asthma. *B,* roentgenogram taken on April 16, 1932. There was a definite improvement in the symptoms. The patient returned to work in another department about the middle of February, and there had been no recurrence of his symptoms.

Roentgen Examination.—There was a marked increase in the hilus and trunk shadows on both sides, with a definite increase in the peribronchial markings in both lungs. There was marked density extending from the region of the hilus toward the cardiodiaphragmatic angles, most marked on the right side. There was an area of clear lung in the region of the costodiaphragmatic angles on both sides. There was evidence of mottling in the midlung region near the sixth ribs, anteriorly, on both sides.

Laboratory Examination.—Several examinations of the sputum were negative for tubercle bacilli. Cultures were positive for Monilia. The Kahn reaction of the blood was negative. The urine was negative for albumin and sugar.

Course.—Oct. 20, 1931: The patient did not work between June 20 and September 5. During this time he showed definite improvement. He returned to his work on September 5, remaining there until October 10. During this time he worked on various types of wood, and he had an aggravation of symptoms if the ties he was working on were maple. At this time he was having severe coughing spells and was still raising about 4 ounces of white, frothy sputum daily. He still showed considerable dyspnea on exertion, but this had improved since he stopped working, on October 10. There was some cyanosis of the lips, and he was quite dyspneic on exertion. At this time he appeared more or less asthmatic. There were coarse dry râles extending over the same area as he showed in his June examination. A roentgenogram showed considerable clearing compared to the film taken June 25, but there was still some increase in the hilus and trunk shadows on both sides. There was no evidence of mottling, and there was a marked decrease in the hilus shadows.

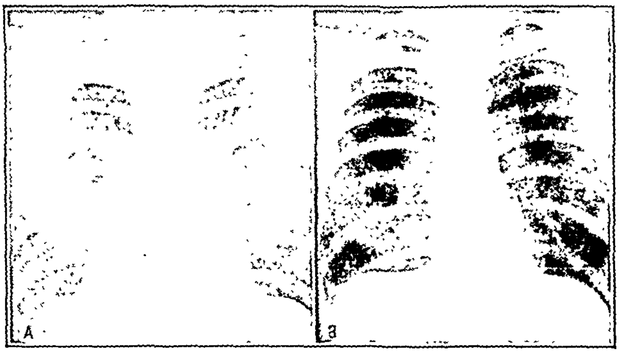

Fig. 5 (case 13).—The patient was a tie peeler. *A*, roentgenogram taken on June 24, 1931. There were marked shortness of breath, cough, expectoration and a loss of 15 pounds one month prior to this examination. *B*, roentgenogram taken on Oct. 20, 1931. The patient laid off during July, August and September. There was a definite improvement in the symptoms. He returned to work on Oct. 1, 1931. He peeled oak ties the first two days, with no recurrence of symptoms. On the third and fourth days, he worked on maple ties, and the asthmatic symptoms *immediately recurred.*

Jan. 26, 1932: The patient had not worked since Oct. 10, 1931. His condition had improved considerably during the winter months. He still had some cough, and he was raising a small amount of sputum. He stated that he got up in the morning and ran for about two blocks, which facilitated the raising of sputum and improved his breathing. His weight remained about the same. There were a few fine râles in the extreme bases on both sides, posteriorly. The general appearance of the patient had improved markedly. An injection of 0.005 cc. of spore extract, given intradermally, produced a wheal 6 mm. in diameter with a definite areola 10 mm. in diameter. An injection of sterile milk for control produced no definite elevation. A scratch test was also done and produced a definite elevation about 1 mm. in width; a control test with flour dust gave negative results.

LABORATORY EXPERIMENTATION

After making certain that there were no tubercle bacilli, the mouths of 11 patients were cleansed with an antiseptic solution, and the sputums were collected in sterile bottles for further study. Cultures were made on plain, dextrose, beerwort and Sabouraud's agar for the presence of yeasts and molds. At the same time a number of control specimens from the wards of the City of Chicago Municipal Tuberculosis Sanitarium were cultured. Seven of the 11 sputums revealed a few colonies each of a white, cottony growth, 5 of which seemed to be, according to growth and fermentation reactions, Monilia tropicalis, and 2, Monilia albicans; 2 of the former killed only rabbits in large intravenous doses (1 cc. of a heavy emulsion), but not in smaller doses. The lesions produced were multiple small abscesses throughout the body, especially in the kidneys, in which the oval yeast bodies were visible plainly and a few short mycelia were present.

These observations were considered inconclusive so far as the etiology of the asthma was concerned, because only 7 of the 11 specimens of sputum were found to contain these forms on repeated examinations, and they did not represent a single species. This tended to discount the findings still more, because whatever the cause might be it should be the same for all.

The findings, however, that caused us completely to discount the value of these culture observations was that the group of control sputums from the Chicago region yielded the same types of yeastlike microorganisms. As a result, our attention was directed to another cause entirely.

During the study of the disease it was observed that the only common factor in the surroundings of all the patients was a black dust that seemed to come from the bark of maple logs. This dust, on examination, was found to resemble fungus spores, the identity of which has not been definitely settled, although an extensive amount of study has been made on it. In the laboratory of the Municipal Tuberculosis Sanitarium, the common mediums used for fungi yielded only a sprouting of the spores with a very short extension of hyphal threads, but none of these sprouts grew to any length. The spores were then sent to Dr. F. L. Stevens of the Department of Botany, University of Illinois, who reported that he had assigned the work to Miss Viola Michael, whose report is as follows:

> Mediums used: dextrose broth, lactose broth, saccharose broth, glycerol broth, dextrose agar, cornmeal agar, starch agar, cornmeal plus dextrose agar, maple bark extract agar, fresh apple (sliced), fresh potato (sliced), fresh carrot (sliced), sterile maple twigs, and sterile maple bark and wood. In all of the aforementioned mediums, mycelium was formed, but in no case could any spores be found except the spores that had been used for inoculation. These spores are oval, single-celled, thick-walled, reddish brown, and form black masses between the layers of the periderm of the maple tree.
>
> The mycelium arising from these spores is septate, profusely branched and hyaline. The cells of the mycelium are very

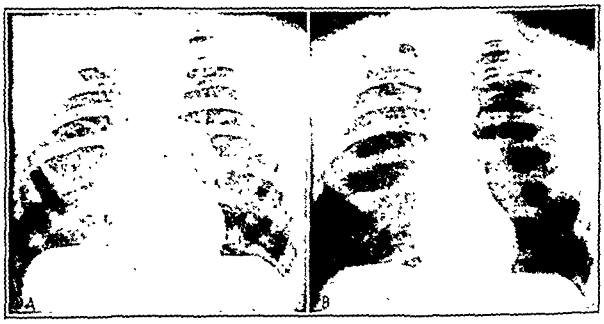

Fig. 6 (case 14).—The patient was a tie peeler. *A*, roentgenogram taken on June 24, 1931. The patient was definitely asthmatic. He lost 20 pounds in the two months preceding this examination. He had severe coughing paroxysms. He stopped work on June 20, 1931. *B*, roentgenogram taken on Oct. 20, 1931. The patient improved sufficiently to return to work on September 5. He continued at his work of peeling ties until October 10. There was a definite aggravation on the days he worked on maple ties.

irregular in shape—sometimes rectangular and sometimes almost oval or square. The branching is frequently penicillium-like.

Microtome sections of the bark in which the spores were found show numerous spores and abundant mycelium, but up to the present time no spores have been found attached to the mycelium in any way. The mycelium exists both inside and between the wood cells. The mycelium found in these sections was usually dark, but frequently a section of hyaline cells was found. Therefore, it seems that the mycelium may be either hyaline or dark.

The spores were also submitted to Dr. R. R. Sayers, Chief Surgeon of the United States Bureau of Mines, who reported in a communication on March 24, 1932, that the organism had been tentatively classified as the conidial stage of some species of Nummularia. He further reported that Dr. Thom, Principal Mycologist of the Bureau of Chemistry and Soils, stated that it is a form known as Coniosporium corticola, which was described in the *Journal of Mycology* in 1889 (p. 69).

As we thought that we were more probably dealing with the action of a foreign body than that of a parasite, we set out to resolve such action, if possible, into any components that it might possess. With the aid of Dr. Meyer Lichtenstein, of the City of Chicago Municipal Tuberculosis Sanitarium, 3 types of material were prepared from the spores for experimentation: a lipoid extract, a protein extract (with Coca's solution) and the dark residue left after the double extraction. The lipoid extract was tested for toxicity by inoculating it in various dilutions under the skin of a guinea-pig and was found to produce nothing but a fleeting local reaction. The protein fraction containing 58 mg. of nitrogen per hundred cubic centimeters of extract likewise produced only a temporary local reaction, while the black residue from the spores produced a reaction like the spores themselves. This type of reaction will be given more in detail by describing the lesions produced in a guinea-pig following subcutaneous inoculation of 0.2 cc. of emulsion preserved in 0.5 per cent phenol at weekly intervals for three weeks. At the end of five weeks, the animal was killed, and the lesions were sectioned and examined.

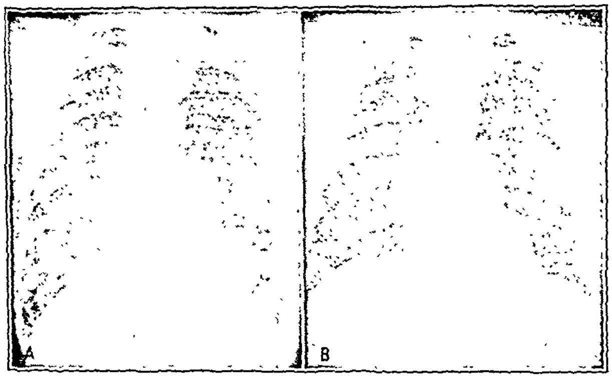

Fig. 7 (case 16).—The patient was a sawmill trimmer. *A*, roentgenogram taken on Oct. 8, 1931. He stopped work on Sept. 29, 1931, because of a severe asthmatic condition. He had a severe cough and night sweats and lost 15 pounds in the two months prior to laying off from his work. *B*, roentgenogram taken on Jan. 7, 1932. The patient had not worked since Sept. 29, 1931. The dyspnea had practically cleared up. There was no cough or expectoration, and the patient had gained 20 pounds since October 8.

Section 1.—After one week there was an abscess consisting of polymorphs mixed with numerous spores, around which was a wall of fibroblasts. There were a few atypical giant cells along the inner margin of the capsule.

Section 2.—After two weeks the fibrous tissue had extended into the abscess, and large numbers of atypical giant cells appeared in the fibrous wall surrounding the abscess. There were numerous large phagocytes containing from 1 to 10 or more spores.

Section 3.—After three weeks the giant cells had increased until they occupied practically half the space in the fibrous capsule. The spores appeared to be "herded" together in great groups with giant cell formations around them. Some of these were from 10 to 20 times the size of ordinary giant cells. In some of the giant cells there remained only black pigment, only the outline of the spores remaining. This black pigment appeared to be the last foreign particle to disappear.

Sensitization experiments were attempted also by inoculating the spores (*a*) subcutaneously and (*b*) intraperitoneally in doses varying from 0.05 to 0.2 cc. for 5 weekly injections. The protein extract was likewise used in an attempt to produce sensitized animals. After 5 injections, 5 each of these animals with 2 controls were subjected to breathing the spore dust in a closed chamber for two hours every other day. As might be expected, sensitization was produced, and the sensitized animals seemed to show distress, especially those that had received the spore dust. One died the first night after breathing the dust. The lungs were inflated and showed numerous punctate hemorrhages resembling an anaphylaxis. As it was the object of the experiment to produce a chronic condition of the lungs so that we might understand the type of pathology produced in human patients, if possible, the other animals were given lighter dosage over a longer period of time.

It was established by the clinical course of the patients as well as the subcutaneous inoculation of the guinea-pigs that there was a toxic action produced by the whole spores. Whether this was a local toxic action, a sensitization or both was the problem that seemed to present itself. We were convinced that there was an unusual local toxic action. It was unlike any effect of dust that we had ever seen in occupations in which large quantities of dust were inhaled. For example, men in grain elevators inhale large quantities of grain dust, but only a few become incapacitated. Among the tie peelers, however, 30 per cent of the employees who continued to breathe the spore dust for more than two months became afflicted. After studying the local action in guinea-pigs, it seemed that it were possible for the same foreign body action to exist in the lungs of the patients, particularly along the lymphatic trunks, similar to that which existed in the lesions of the guinea-pigs. As the inoculations into tie peelers were repeated daily for a long time, a cumulative action resulted and gradually the patients developed the clinical symptoms described, which did not disappear until the foreign bodies were slowly removed by phagocytosis and digestion. On reappearance of the patients in the contaminated surroundings, however, they experienced distress immediately, indicating that a type of protein sensitization had most likely developed similar to that produced by rust spores, castor bean dust and boxwood dust, cited before.

We then attempted to carry out skin reactions to prove or disprove such a hypothesis. This work consisted of two parts: (*a*) active and (*b*) passive. The active tests and results have been described previously.

For passive transfers (Prausnitz-Küstner reaction), blood from patients with active conditions was drawn and sent to Chicago by mail in sterile containers, where the serum was drawn off, filtered through a Berkefeld filter and inoculated into patches of normal skin by Dr. Lichtenstein, followed in forty-eight hours by the inoculation of protein extract. The results were unsatisfactory owing to a nonspecific reaction. The serum was then added directly after treatment with 1:1,000 merthiolate, and again the local reaction was too violent for suitable observations. Next we had the serum drawn off at the time the blood was drawn, sealed in sterile ampules, packed in ice in a vacuum bottle and shipped by mail as before. The serums arrived in a frozen condition, but permitted experimentation. The experiments were carried out in the usual manner on fresh serum, and after forty-eight hours 0.05 cc. of the protein extract containing 58 mg. of nitrogen per hundred cubic centimeters of solution was inoculated into each sensitized area with suitable controls. The results, however, did not show sufficient difference to warrant conclusions. While not entirely negative, they were decidedly inconclusive and indicated an inadequate protein extract, a deterioration of the reagin by freezing or a weak and atypical sensitization that had not been met with before. More experimentation is being contemplated to prove this point definitely.

The conclusions that may be drawn from this experimentation are:

1. The spores are irritating to the animal tissue as shown by the inflammatory reaction produced when inoculated subcutaneously into guinea-pigs.

2. A foreign body reaction seems to be caused by the dark brown covering of the spores, after lipoid and protein extraction.

3. The spores are capable of causing a sensitization, following parenteral administration to guinea-pigs, that resembled anaphylaxis in its pathologic aspects.

4. The passive transfer of reagin was not demonstrated in human patients, although there was a strong suggestion of active protein sensitization.

COMMENT

We have been unable to find records in the literature connecting asthmatic conditions with spore dust found in timber products. The condition that we have observed is remarkably similar to the cases Cadham reported of men sensitized to the spores of rust-infected wheat. The proper heat and moisture must be present to promote the growth of the fungus. Thus, apparently, it is not found in freshly cut or green logs. Owing to the economic depression, most of the wood being worked today was cut into logs from one to two years ago, and this wood has been carried through a hot, moist summer, which would be favorable to the growth of fungus. The question may be raised concerning the rôle of wood dust in this condition. We feel, however, that the prompt disappearance of symptoms following the removal of workers from the sawmill to other parts of the body plant where they come into contact with the wood rules that out.

From an industrial standpoint, the condition would be compensable in states with occupational disease features in their compensation laws. As a precautionary measure, we would suggest the spraying of the saws with water during the sawing operation. Since this procedure was instituted in the sawmill mentioned, there have been no further cases occurring in the past three months. When men show indications of sensitization to this particular spore, they should immediately be removed from the particular operation exposing them to the spore dust. The wearing of respiratory masks offers no protection to the employees. A "stagger" system of employment has been suggested, but it is hazardous for the employer, as it extends his liability over a greater number of employees. The condition does not occur in men working with green timber. The working of only freshly cut timber products offers the safest solution. We have had an opportunity to study 35 cases during the past ten months, but our records show the existence of about 46 cases occurring in only 2 of the industries in our locality. It is not at all improbable that there have been a great many cases occurring in other sections of which there are no records and on which no definite diagnosis was made.

SUMMARY

A clinical, roentgen and laboratory study has been carried out on a series of 35 patients in the Upper Peninsula of Michigan. The symptoms were acute and typically asthmatic. The predominating symptoms were dyspnea, cough, loss of weight and varying amounts of expectoration. Certain patients reported a rise in temperature ranging up to 103 F., with occasional night sweats, and a few complained of substernal pain.

On investigation it was found that these patients were working where they came in contact with dust from maple logs that had been cut for more than a year. The dust proved to be spores of a fungus, tentatively classified as Coniosporium corticole.

Extracts of the spores produced local skin reactions in the affected group, as did likewise a suspension of macerated spores, while control tests gave negative results.

It is our opinion that this condition is due to a local toxic effect and foreign body reaction combined with a delayed effect resembling protein sensitization in its clinical and certain immunologic aspects.

Preventive measures should include the removal of affected patients from the environment of the spores as soon as they are detected, or the saturation of the saws during the working process.

From an economic standpoint, it would be more profitable to work only with freshly cut logs and thus avoid the risk of penalty under the workmen's compensation act.

Since this article was submitted for publication, C. Aubrey Richards, Pathologist in Charge, Forest Products Laboratory, Madison, Wis., sent us the following information:

> The fungus on maple which you sent us several months ago has at last been identified as *Coniosporium corticale* E. and E. This fungus has also been found recently on dying maples, hickories, and basswoods in some virgin forest north of Fond du Lac, Wisconsin. It is one of the Fungi imperfecti, and is probably the imperfect stage of another fungus which might be causing the disease of the trees.

ABSTRACT OF DISCUSSION

Dr. Francis M. Rackemann, Boston: The toxic effects, the illness and loss of weight, the changes in the roentgenogram and the production of abscesses in guinea-pigs all suggest to me that the authors are probably dealing with a true infection, but in addition to this some of their patients developed asthma. The interpretation of that asthma presents an interesting and difficult problem. Wheezy dyspnea occurs in silicosis in adults, and also in children who have marked capillary bronchitis, and is due to the effect of the bronchial exudate in those cases. On the other hand, allergy may be defined as the capacity to develop sensitiveness to foreign substances, including bacterial substances, and there is evidence that the allergy depends on a fundamental background, the nature of which is quite unknown. The authors' patients had asthma again within forty-eight hours after return to their work, having been free from symptoms after the first attack. A good many had positive skin tests, and I believe they may constitute another example of acquired sensitiveness to a characteristic and specific substance found in their occupation. But in other allergic conditions only a few individuals among all those exposed will develop asthma. For example, of all the girls who powder their noses, only a small proportion develop hay fever-like symptoms. Of all who are exposed to horses, only a few develop horse asthma. There is a reason why only a few of these persons develop symptoms. Only a few have the fundamental background of allergy; that is, the capacity to develop sensitiveness. In order to bring out this background, which is undoubtedly present in these cases, I should like to ask four questions: 1. Do the ten cases represent all those men exposed to maple dust or only a part of them? As a matter of fact, the authors have answered this already by saying that there were thirty-five cases in the whole series but that only ten present these characteristic symptoms. 2. How many of these cases show some other manifestation of allergy besides the asthma? Did they have hay fever, eczema or urticaria, which might illustrate their capacity to become sensitive to still other substances? 3. Do any of the men give evidence of allergy in their families, showing inheritance of this allergy? 4. Do any of them have a blood eosinophilia, which is so common in allergic cases of all sorts?

DR. FRANK SMITHIES, Chicago: In practically none of the instances of sporotrichosis reported in 1927 by Bridges and Claypoor was there evidence of associated asthma. However, in the study of the allergic asthmatic manifestations, one must not lose sight of the concomitant organic disease. Patients with fungus infection of the lungs, apart from allergic asthma, may exhibit pathologic changes quite as serious in termination as in tuberculosis. In the mild cases suspected of tuberculosis but in which tubercle bacilli are not found, in the presence of allergic manifestations, caution should be exercised in making tuberculin tests. In our practice, a recent experience emphasized this. To a patient allergic but not known to be so, 2 mg. of old tuberculin was given intradermally in the forearm. Within twelve hours there were extensive ulcerative lesions in the mouth, the pharynx and the alimentary tract. Many such lesions bled freely. The patient was extremely ill from the acute anaphylactic response. The search for tubercle bacilli should be continued in all these patients exhibiting fungus infections because in Bridge's series about one sixth of the patients had tuberculosis in association with the fungus infection. In fungus infections in which the asthmatoid manifestations are associated with extensive pathologic changes in the bronchi serious complications are possible. Lung abscess and bronchiectasis are distressing, even fatal, concomitants: the thick foul abundant sputum is characteristic. Fatal hemorrhage is not uncommon. Certainly, if the fungus infection introduces the factor of asthma as an allergic manifestation, the clinical picture becomes complex and distressing. Spores exhibit intimate relationship to the lymphatics and blood vessels. In such circumstances, not only is it possible to secure a rapid systemic toxic response to the fungus but, as Bridge and Claypool demonstrated, spores actually may enter and remain viable in the blood stream. In the examinations of these patients, I should like to know about the blood counts, the blood cultures and the presence in the sputum of organisms other than fungi or spores. Certainly the treatment of the sporotrichosis is greatly complicated by the associated asthma. I should like to know what therapeutic measures were exhibited apart from isolating the patients from sources of infection. The economic side has been stressed, but perhaps not sufficiently. In our section of the country we are apt to send asthma sufferers to upper Michigan or Wisconsin. It requires consideration as to whether we should still advise some patients who already have asthmatic manifestations or hay fever annually to change their residence. Away from water they may be subject to sensitization from wood spores and when near water they may be not quite so comfortable but, perhaps, will not be endangered by the wood-borne fungi.

DR. N. F. THIBERGE, New Orleans: In our clinic about a year and a half ago a grain elevator worker presented himself for treatment. We tested him for all the allergens at our disposal, and he was negative except for a slight susceptibility to wool. He was directed to get scrapings from the dark corners around his place, and the examination yielded a profuse growth of spores. Between his two examinations he had not exposed himself to the grain dust outside of the time he took to collect it, so he reported rapid improvement. He furnished us with material with which we could test other patients, and we found a direct parallelism between the reaction for wool and the reaction for the spores collected from the scrapings of the grain elevator worker. I should classify this case as allergic. Professor Castellani several years ago called attention to the frequency with which spores attack the bronchial tree and the pulmonary tissue, and it was his recommendation that high doses of potassium iodide be given. I followed the advice with great success in cases in which I suspected spores as a cause of allergy. The roentgenogram of allergic asthma resembles closely the roentgenogram that the authors showed. The apical area was not much involved but increased density was more marked near the hilus, extending down to the base, so much so that it was mistaken for a syphilitic condition; but the diagnosis was not confirmed by the Wassermann reaction. Examination of atmospheric plates exposed near the work should be used as a check. I do not believe the examination of sputum yields very much, because at the time of the asthmatic spell the asthmatic person is not likely to expel many spores. It is only during convalescence that one would expect to obtain much information from examination of the discharge. The collection of the spores and the making of the culture is easy, and I think it opens up a field of investigation to determine whether there is not a parallelism between wool and spores. I believe that in a good many cases, in which everything else is negative and only the reaction is positive for dust, one should take into consideration the fact that spores really are at the bottom of these cases of asthma.

DR. JOHN W. TOWEY, Powers, Mich.: In answer to Dr. Rackemann's inquiry regarding the family and the personal history of previous allergic conditions, the history was negative in those cases investigated in this regard, although this examination was not carried out to the fullest extent in all our cases. No eosinophils were demonstrated in the sputums, and the blood pictures were essentially negative. We considered early the possibility of a pneumonoconiosis. The tie workers were idle during the winter months preceding March, 1931. They returned to work in that month. The symptoms began to develop in June, 1931. The rapidity of onset following the return of these men to their work discounted to a great extent the factor of an existing dust inhalation disease. If we were dealing here with an infection we should expect it to be progressive to a certain extent after the men discontinued their work, but here we found the symptoms beginning to improve immediately and a corresponding clearing in the roentgenograms as soon as they were removed from the spore dust environment. Sputum cultures in our patient group showed Monilia albicans and Monilia tropicalis. These did not vary any from our control sputum group and furthermore, since we found two species of organisms, it further discounted these organisms as being etiologic factors. We do recognize the spores as foreign bodies having a toxic effect and producing an inflammatory condition in the lung. As regards the incidence, the tie plant mentioned employs 200 men. Of these employees only 32 come into direct contact with the bark as it is taken from the ties, and of this group only 10 developed definite asthmatic symptoms. Out of 800 sawmill employees, 36 presented dyspnea to such an extent that it was necessary either to take them out of their occupation or to transfer them to other departments of the mill where they would be removed from the spore dust environment. We recognize that this condition is not typical as regards its allergic aspects. Allergy is comparatively a new subject about which there still remains much to learn, and it is possible that we are dealing here with an atypical form of allergy not encountered heretofore.

SARCOMA OF THE CHOROID

HISTORY OF SIX CASES, WITH EARLY OPERATION

HERBERT MOULTON, M.D.
AND
E. C. MOULTON, M.D.
FORT SMITH, ARK.

Sarcoma of the choroid occurs about once in every three thousand pathologic eyes (Hill Griffith[1]). Cases actually seen in the first stage are still rarer. As the six patients whose cases will be reported were seen and operated on at an early stage and were followed up for from five to twenty-seven years, it was thought that they might be of interest, especially in reference to prognosis.

Four of the patients were operated on during the first stage.[2] In two cases (cases 3 and 6) the condition was probably entering the second stage, as there was beginning increased tension. However, they may be properly included in the series because involvement of the outer coats of the eye had not occurred.

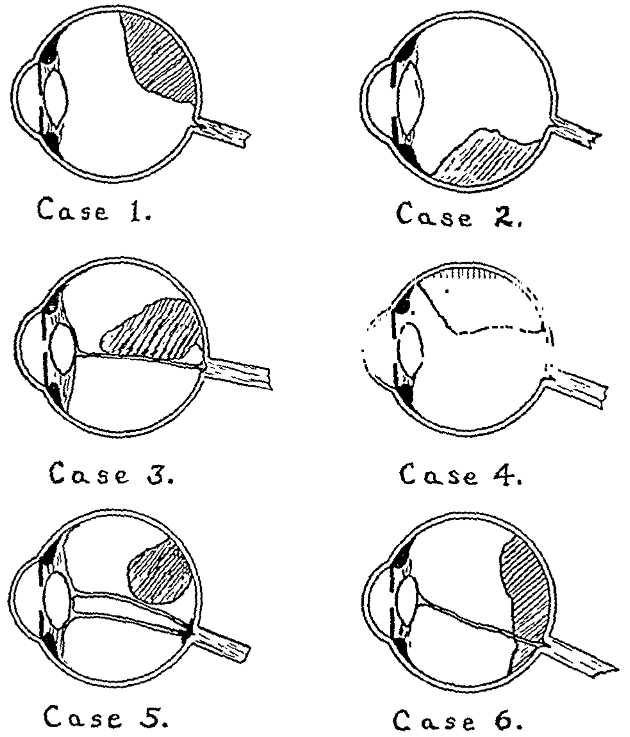
Case 1.
Case 2.
Case 3.
Case 4.
Case 5.
Case 6.

Fig. 1.—Semidiagrammatic drawings, showing the relative size and position of the various tumors.

It is generally agreed that when a tumor is seen in the vitreous chamber of a human eye, the eye should be enucleated. In an adult such a tumor is probably a sarcoma. If allowed to grow out of the eyeball, the tumor will almost certainly cause the death of the patient.

On the other hand, if it is removed before the outer coats of the eyeball are involved, it is less likely to recur or to be followed by metastasis. It is known that even after the earliest operation metastasis sometimes follows, while local recurrences are very rare.

Two questions present themselves:

1. What degree of safety can one promise a patient operated on in this early period? 2. What period of time must elapse before safety is assured?

Most published early cases have been reported soon after operation, without an opportunity to observe or record the subsequent history.

Summary of Cases

Case Number	Age at Operation	Status After Operation	Type of Sarcoma
1	44	Living and well today, after 28 years	Small spindle cell
2	58	Well 15 years; death from apoplexy	Leukosarcoma; small spindle cell
3	53	Living and well today, 16 years later	Small spindle cell
4	52	Metastasis and death 4 years and 8 months later	Small spindle cell
5	50	Metastasis and death 2 years later	Large round cell
6	42	Generalized sarcomatosis and death 19 years later	Large round cell

In all but one (case 3) of the six cases here reported the diagnosis of an intra-ocular tumor was made with the ophthalmoscope. In that one, transillumination made the diagnosis reasonably certain. Increase of tension had recently begun. Total detachment of the retina was present, but section, after enucleation, showed that the outer coats of the eye were not involved by tumor cells.

REPORT OF CASES

Case 1.—*Small spindle cell melanosarcoma.*

Miss B., aged 40, in May, 1899, had normal vision in each eye with + 2.75 sphere.

On Oct. 10, 1903, four years and six months later, she was seen again because of disturbed vision for about the past two months. Vision of the right eye was found to be normal when corrected; that of the left eye, 20/200 unimproved. A large, well defined tumor was seen in the temporal half of the retina, leaving the disk and nasal half of the fundus visible through the clear media. The diagnosis was probable sarcoma of the choroid. Enucleation was advised. Dr. Adolph Alt and Drs. Green, Ewing and Post of St. Louis examined the patient and confirmed the diagnosis. However, it was not until seven months later, in June, 1904, that she consented to the operation, which was performed by Dr. Ewing. At the time of writing, twenty-eight and a half years later, she was living and well.

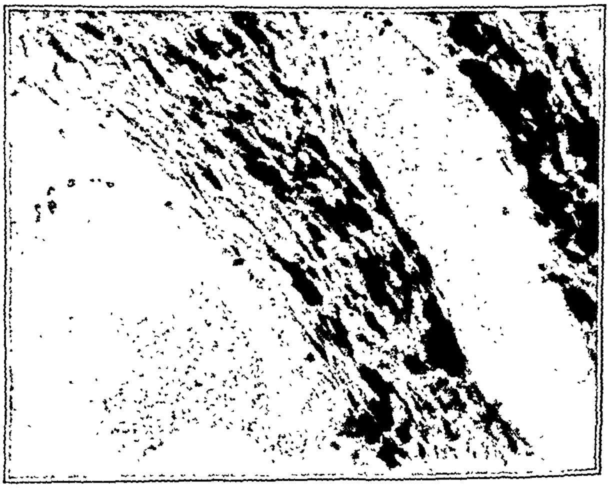

Fig. 2 (case 1).—Small spindle cells, pigmented; reduced from a magnification of 320 diameters.

Read before the Section on Ophthalmology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

[1] Griffith, Hill, quoted by Norris, W. F., and Oliver, C. A.: System of Diseases of the Eye, Philadelphia, J. B. Lippincott Company, 1897, 1898, vol. 3, p. 365.

[2] Fuchs, Ernst: Text-Book of Ophthalmology, ed. 7, translated by A. Duane, New York, D. Appleton and Company, 1892, p. 723.

CASE 2.—*Small spindle cell leukosarcoma.*

Frank Benson, aged 58, a farmer, came to the hospital on March 7, 1915. About six weeks before, he had noticed a defect in vision of the left eye, which had been growing worse. Both eyes were white and quiet. The tension was normal. The pupil of the right eye was 2 mm.; it reacted to light. The pupil of the left eye measured 4 mm.; it did not react to light. Vision in the right eye was 20/20; that in the left, 6/200. In the nasal part of the fundus could be seen by the ophthalmoscope and by focal illumination a well defined tumor, filling about one fifth of the vitreous chamber. Very few specks of pigment were scattered on its surface. The pupil was dark when a transilluminator was placed on the upper nasal side of the sclera. Six days later the eye was enucleated. In May, 1930, fifteen years later, the patient died suddenly of apoplexy at the age of 73. He had been well up to the time of his death. This case was reported at a meeting of the Southern Medical Association in Dallas, Texas, on Nov. 8, 1915.[3] The late Dr. Marcus Feingold of New Orleans examined the slide and, in his discussion, expressed the opinion that the case was one of the few nonpigmented sarcomas reported in the literature.

CASE 3.—*Small spindle cell sarcoma with very little pigment.*

Mrs. B. P. G., aged 53, came to the hospital on Sept. 1, 1915. Vision had failed in the right eye for several years, and the eye had been blind for three years. There had recently been attacks of pain. One week prior to examination morphine was required for relief. On examination, chemosis of the conjunctiva was found. The pupil was dilated. Tension was high, 60 mm. Schiötz. The retina was detached. Transillumination was darker from above and to the nasal side than from other directions. Enucleation was done on October 10. The sclera was intact. The vitreous chamber was partly filled with a growth, which on section was reported to be a small spindle cell sarcoma, with very little pigment, originating in the choroid. The microscopic appearance was much like that of leukosarcoma. At the end of sixteen years, the patient was alive and well.

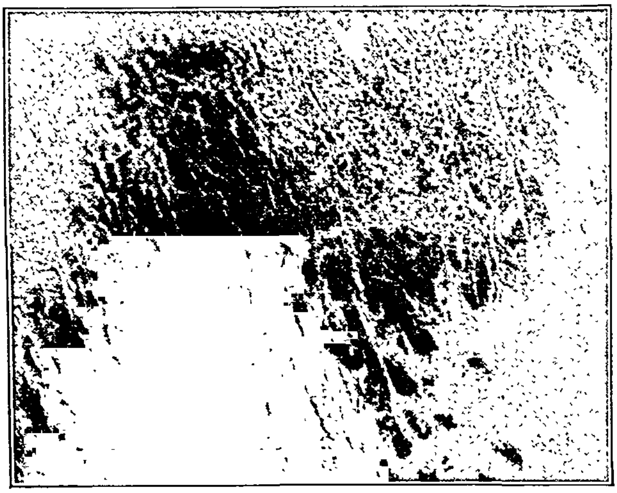

Fig. 3 (case 2).—Small spindle cell leukosarcoma; reduced from a magnification of 100 diameters.

CASE 4.—*Small spindle cell melanosarcoma.*

Mrs. E. S. H., aged 52, was first seen on Jan. 16, 1924. Ophthalmoscopic examination at this time showed no lesion of the fundus. Vision was 20/20 corrected in each eye. On Oct. 19, 1925, she returned with the complaint of scintillating scotomas for a year. The superficial structures of both eyes were normal. The right pupil was 5 mm. in diameter; it did not react to light. The anterior chamber was normal. Tension was normal, 21 mm. Schiötz. Vision was 5/200 not improved.

In the upper outer part of the vitreous chamber was a dark tumor, which filled one third of the chamber and was easily seen by both ophthalmoscope and focal illumination. Enucleation was done on October 22. Four years and eight months later, in May, 1930, the patient died of "cancer" of the liver. No autopsy was performed, but the surgeon reported that he had opened the abdomen a few months before. As he found an inoperable "cancer" of the liver, he closed the abdomen. The microscopic diagnosis of the tumor of the eye was small spindle cell melanotic sarcoma.

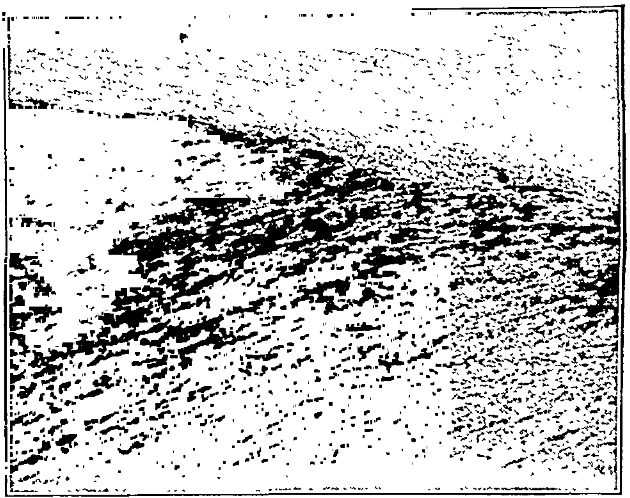

Fig. 4 (case 4).—Small spindle cells, lightly pigmented; reduced from a magnification of 80 diameters.

CASE 5.—*Large round cell melanosarcoma of the choroid.*

Mrs. Jones, aged 50, on Dec. 7, 1923, said that her right eye had never been as good as the left, but that she had noticed vision of that eye failing rapidly for the past four months. We found it to be 4/200. The pupil did not react. The anterior chamber was normal. Tension was 17 mm. (Gradle, Schiötz). A tumor filled one fourth of the vitreous chamber. The pupil was dark to transillumination from below. No inflammatory signs were present. The left eye had normal vision. Enucleation of the right eyeball was urged but refused. Five months later there was no perception of light, the pupil was widely dilated, and the anterior chamber shallow, but still there was no increase of tension. The retina was completely detached.

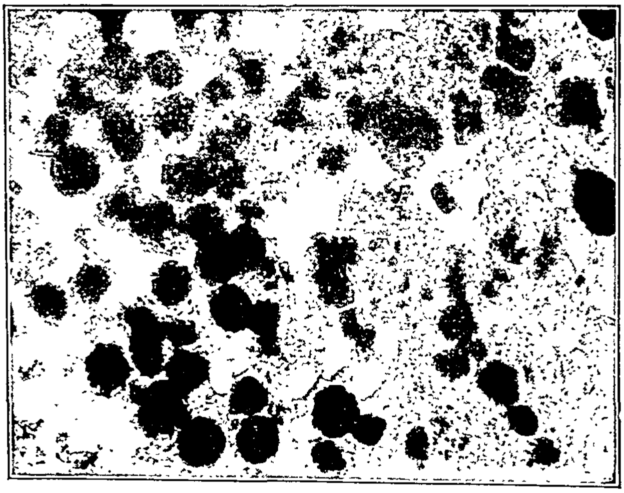

Fig. 5 (case 5).—Large round cells, pigmented; reduced from a magnification of 320 diameters.

The patient then consented to undergo an operation. The diagnosis was confirmed by microscopic section. In December, 1925, she had a large, rapidly growing tumor removed from the alveolar process. Nodules were reported in the liver and a large mass in the pelvis. Death occurred in the last of December, two years after enucleation.

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[3] Moulton, H.: South. M. J. 9:738 (Aug.) 1916.

Case 6.—*Large round cell melanosarcoma.*

Mr. W. M. Choate, aged 42, a farmer, early in 1909 had a tumor diagnosed as probable sarcoma of the choroid, which was observed by one of us (Dr. H. Moulton). It filled about half the vitreous chamber of the right eye. It was not until after two months had passed, when there was increased tension, but no inflammation or perforation, that the patient consented to enucleation. Sixteen years later, in 1925, he had his gallbladder and appendix removed. The hospital records do not show that any tumor was found in the abdomen. In August, 1927, nodules appeared on the sternum. In a short time others appeared, and by February, 1928, more than a hundred were counted on various parts of the body, under and in the skin. Soon afterward, gastric disturbances appeared, followed by death.

The gross specimen and the microscopic section of the tumor of the eye were preserved to confirm the diagnosis. The metastatic tumors were examined by Dr. Blair, pathologist to Sparks Memorial Hospital, and were reported to be large round cell melanotic sarcomas. The patient lived nineteen years after operation, one year after metastasis was recognized.

SUMMARY

1. There were three cures; two patients were living and well from fifteen to twenty-seven years after operation. One was living and well fifteen years after operation, when he died suddenly of apoplexy at the age of 73.

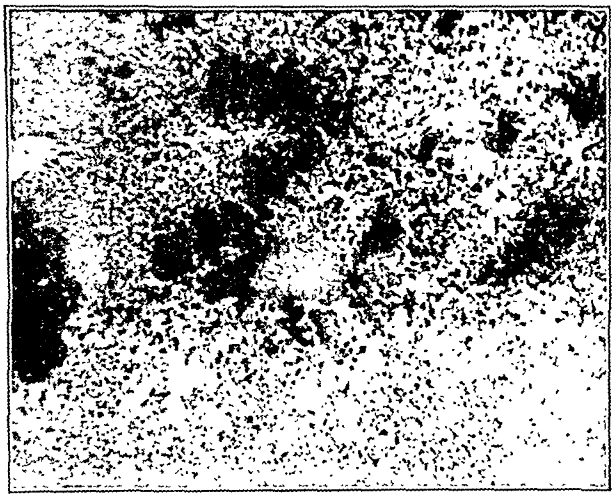

Fig. 6 (case 6).—Large round cells, pigmented; reduced from a magnification of 80 diameters.

2. There were three deaths from metastasis, four years and eight months, one year and ten months and nineteen years after operation, respectively.

3. All of the patients who lived had tumors of the small spindle cell type, one of which was a leukosarcoma.

4. In two of the fatal cases the tumors were of the round cell type, and one was a small spindle cell sarcoma.

Dr. Edward Shumway,[4] in discussing sarcoma of the choroid, said that the round cell is of more importance than the presence of pigment in the production of metastasis.

CONCLUSIONS

Based on this small series, we may infer the following conclusions:

1. Metastasis may occur after the earliest enucleations.

2. It may occur as late as nineteen years after enucleation.

3. It may occur with any type of cell, but the round cell is most malignant.

4. In this series cures were 50 per cent.

Hill Griffith[5] estimated cures after operation in all stages at 50 per cent, but his time limit was only three years, obviously too short a period, as in two of our fatal cases the patients were well for much longer periods.

ABSTRACT OF DISCUSSION

Dr. Mary Knight Asbury, Cincinnati: My experience has been much the same as that of the authors, though the results have not been as satisfactory. Dr. Benedict has been kind enough to assist in retracing the series of intra-ocular, melanotic tumors which I reported from the Mayo Clinic before this section in 1924. There were seven eyes containing choroidal neoplasms enucleated in the so-called first stage of the disease; that is, before the onset of inflammatory symptoms. Two patients have not been heard from; three are dead, surviving from eighteen months to four years after enucleation, and two are living and well, one five years and one fourteen years after operation. On the other hand, two eyes, which had reached the inflammatory stage, were removed and the patients were living and well more than five years later. Even the third stage was represented among the long-lived patients. One patient with choroidal melanotic neoplasm gave no history of inflammatory attacks, but when the eye was removed orbital extension of the tumor was found. This patient was alive without recurrence or evidence of metastasis eight years later. In the microscopic examination some points to consider in estimating the degree of malignancy are the regularity or uniformity of the cells, the number of mitotic figures present, and the amount of cytoplasm. Highly malignant, rapidly growing cells develop little cytoplasm. The cells of the tumor in the eye of the patient who died of abdominal metastasis eighteen months after operation had vessels of varying size, little cytoplasm, and numerous mitotic figures. The tumor of the patient well five years after removal was made up of cells with abundant clear cytoplasm. In 1924 I was convinced that the amount of melanin in the tumor was of great prognostic value, but now I believe it is of little help. True, the patient who is alive and well fourteen years after enucleation had a very black neoplasm, but the two tumors that were removed after the onset of the inflammatory second stage contained relatively little pigment, and some of the patients with black tumors are dead. The results in the authors' cases support this revised point of view.

Dr. Laura A. Lane, Minneapolis: In the twenty-five year period following the Kerschbaumer report I have collected nearly 1,000 cases of sarcoma of the eye; 356 of these reports are on sarcoma of the choroid. Many questionnaires have been sent out to complete the study, and 171 of the 356 choroidal cases are practically at present complete. I submit the following data, some of which are at variance with the report of the authors. With the first conclusion of their paper, my work agrees. Dr. John Weeks has reported the smallest sarcoma of the choroid on record. His case was of the spindle cell type, and metastasis occurred twelve years later. There are numerous other reports in which the growth was exceedingly small at the time the eye was enucleated, and in most of these cases metastasis occurred within the first year; hence early removal in the earliest stage will not prevent a fatal issue. Of the 171 cases followed, 80 patients are dead and 88 have developed metastasis, and at least 12 others had or have at present a probable metastasis. Metastasis to the liver is the most common site. The other organs concerned in metastasis are about in this order: the pancreas, kidney, heart, lungs, brain, and then the skin. The duration of life after operation ranged from one year or less (sixty-nine cases) to twenty-four years (one case). Only two cases on record as yet have gone thirty years without metastasis. The largest number of deaths has been among those patients who had a spindle cell type of tumor. There were 29 spindle cell type tumors among the 80 known dead and 124 among the 356 reports of sarcoma of the choroid. There were 23 mixed cell type tumors among the dead and 69 among the 356 reports, while only 15 of the known dead had a round cell type of tumor, and only 53 of the 356 were in the round cell category. Only 13 reports of those dead of sarcoma of the choroid are incomplete, and only 23 among the 356 reports are incomplete as regards the type of cell. It appears, then, that the third conclusion must be reversed. I think the confusion has arisen from the fact that the orbit is the next most frequent part of the eye to be attacked by sarcoma, and the round cell type fatalities predominate slightly in orbital sarcoma. My data do not give as high as 50 per cent cures with surgery alone. I am inclined to think the final tabulation will show figures more nearly approaching de Schweinitz's estimate. May I make a final plea for fuller reports and longer follow-up work, and I would greatly appreciate more data on cases published since 1900.

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[4] Shumway, E. A.: Am. J. Ophth. 9: 765 (Oct.) 1926.

[5] Griffith (footnote 1, p. 377).

Dr. Edward Jackson, Denver: One practical point is worth referring to. That is, in the individual case the chance for escape from a fatal termination is intimately bound up with early recognition, and there is one means of early recognition that I am sure has not been used as much as it might be. That is the diagnosis, through the detached retina, of a tumor lying behind the detached retina, by use of direct sunlight. That is practical. I called attention to it more than thirty years ago. I have applied it in all cases in which there was a presumption of a tumor of the choroid and which was hidden by the later detachment of the retina. In none of those cases was there failure to indicate whether or not there was something behind the detached retina; and the indication was not a mistake, since it was verified by removal of the eyeball. If the eye is blind there is scarcely any limitation to the ophthalmic examination; but even if it is not blind, if there is a presumption of tumor, it is worth while to investigate by using direct sunlight.

Dr. E. C. Moulton, Fort Smith, Ark.: A malignant growth diagnosed and operated on early offers the patient his best prospect for life. It is most reasonable to expect a favorable prognosis in those cases in which the growth is closed within such an impermeable tunic as the sclera, and especially when the bulb and its contents are removed early. However, in half of these six cases of sarcoma in which the patients were operated on well within the limits of the so-called first stage, there has been metastasis and death. One of our purposes in bringing these cases to attention is to note that the round cell types were the most frequent to metastasize, and that those of the spindle cell type were less likely to do so, especially if lacking or nearly lacking in pigment. We feel particularly that these cases are the more valuable and significant because of the rather unusual length of time that they were kept under observation. It is not unusual for an instructing clinician in escorting a student through the wards to remark: "Here is a patient with one eye removed and nodules on his liver. What is the matter with him?" If we as ophthalmologists can do any one thing to overcome this little gesture toward levity, it is to be ever on the alert in our differential diagnosis of beginning dimness of vision and enucleate early. It was not our intention in presenting these cases to go into the more technical phase of factors concerning prognosis, but in case 5, in which death occurred in a fraction less than two years, it was no more than to be expected because of the microscopic picture of the tumor. There are mitotic figures to be seen and a striking picture of the pseudorosets as described by Major Callender. It is a highly malignant type of sarcoma. In the other five the microscope was not of value in giving an opinion as to life expectancy.

The Reactions of the Eye to General Disease.—The first disease which occurs to one in connection with the lens is, of course, diabetes, with its well known complication of diabetic cataract. There is another complication, however, which is quite common though not so well known, and that is alteration in the refractive index of the lens. This is of great clinical importance; what probably happens is that, as a result of alteration in the osmotic pressure of the eye fluids, accompanying the rising sugar concentration in the blood, fluid tends to enter the lens. This makes it bulge, increases its convexity, and so renders the eye more myopic, a change which may take place without any development of cataract.—Williamson-Noble, F. A.: *Lancet* **1**:1345 (June 25) 1932.

COMPLEMENTAL FEEDING IN THE NEW-BORN INFANT

ITS EFFECT ON BREAST NURSING

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AND
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The growing practice of supplementing the natural food of the infant in its first week of life prompted a study of the effect of this procedure on the infant as well as of its ultimate effect on the supply of breast milk. As is well known, the incomplete emptying of the breast makes for a diminishing breast supply and early weaning of the baby.

Our observations were made on infants born in the hospital who could be followed closely for at least ten days. Although many were followed for a longer period, comparisons were made on their progress up to the tenth day of life, because it is at this time that many begin to leave the hospital. We have followed the weight progress and food intake of nearly 900 normal infants.

Three general plans were followed in the management of these children. The first group, consisting of 450 infants, were breast fed exclusively. The second group, comprising 256 infants, were given a limited quantity of artificial food if the breast milk was not sufficient for the theoretical needs of the baby. The third group were offered complemental feedings freely if they manifested signs of hunger or if the gain in weight was not satisfactory.

TYPES OF FEEDING

Breast Feeding Exclusively.—The first group was from the City Hospital, where a great effort is made to have the babies breast fed. The bottle is never started without some good reason and more stress is put on obtaining a good breast supply than on the infant's hunger and gain in weight. When 88 per cent of the infants from this nursery go home, they are being fed on the breast only. Our figures were for consecutive infants entirely breast fed when leaving the hospital.

Table 1.—*Weight on Tenth Day Compared to Birth Weight*

	Breast Fed Exclusively		Breast and Complemental Feeding	
	Number	Per Cent	Number	Per Cent
Regaining birth weight	140	31.1	174	68.0
Not regaining birth weight	310	68.9	82	32.0
Total	450		256	

In this group of 450 infants given breast feedings thought to be adequate or nearly so, 140, or 31 per cent, regained their birth weight by the tenth day. Of the 310, or 69 per cent, under their birth weight, the average deficiency was 2 ounces (56 Gm.) (tables 1 and 3).

Breast Feeding With Limited Complemental Feedings.—The second group, comprising 256 infants, were from the University of Kansas Hospital, where for the past few years it has been customary to start

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Read before the Section on Pediatrics at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

complemental feedings for those infants who did not obtain any breast milk on the first day or whose supply of breast milk was insufficient as determined by weighing before and after nursing. When it was found that the milk obtained at each nursing did not measure up to the theoretical requirement, the deficiency was made up with artificial food. We used Scammon and Doyle's figures[1] for stomach capacity to compute the amount that the baby should take at each feeding (table 4). The complemental food consisted of a mixture of evaporated milk, water and sugar containing 20 calories to each ounce of body weight. A nurse held the baby while it took the bottle, and an effort was made to give the prescribed quantity.

Table 2.—*Infants Regaining Birth Weight On or Before Tenth Day of Life*

	Breast Only		Breast and Complemental Feeding	
Day	Number	Per Cent	Number	Per Cent
1	1	0.22	3	1.17
2	0	0.00	0	0.00
3	4	0.89	7	2.73
4	8	1.77	14	5.47
5	21	4.67	27	10.55
6	21	4.67	31	12.11
7	22	4.89	46	17.99
8	16	3.56	19	7.42
9	21	4.66	15	5.86
10	26	5.77	12	4.69
Total	140	31.10	174	67.9

It is believed that everything was done to exhaust the breast supply and to promote the flow of milk before offering the complemental feeding. In this group, as well as in the former, the nursing routine was every four hours day and night. Until the milk became sufficient for sustained attempts at nursing, the baby was allowed to nurse for only three minutes, and as the milk became more abundant the time was lengthened. This reduced the incidence of fissured nipples, and promoted successful nursing.

As the breast filled with milk, usually on from the third to the fourth day, the quantity of complemental food was decreased, or it was withdrawn entirely. If it was found that the breast supply was not sufficient for daily gains in weight and did not measure up to the stomach capacity, enough of the complemental food was given to make up the deficiency. The infant was not allowed all the artificial food he would take.

Table 3.—*Weights of 450 Infants on Breast Compared with 256 Infants on Complemental Feeding*

	Average Weight, Pounds	Average Over Birth Weight (140 Infants)		Under Birth Weight (310 Infants)	
		Ounces	Per Cent	Ounces	Per Cent
Breast only	7.36	0.07	0.6	2.1	1.8
		(174 Infants)		(82 Infants)	
Breast and bottle	7.28	2.89	2.5	1.2	1.03

In this group in which complemental feedings were given to measure up to the theoretical requirement, 174, or 68 per cent, of the infants regained their birth weight by the tenth day. These infants attained an average of nearly 3 ounces (85 Gm.) above their birth weight, a much better showing than that made by the group receiving feedings exclusively of breast milk (table 3).

The infants who made satisfactory gains either on the breast milk alone or with a complementary food containing 20 calories to each ounce were found to require from 43 to 53 calories per pound (table 5). A mixture of less caloric value would necessitate larger amounts and was likely to retard emptying of the breasts. The infant of average weight takes approximately 500 cc. (16 ounces) of milk by the time it is 1 week old (table 4).

It appears from this study that carefully controlled complemental feeding is advantageous in selected cases in which the breast milk is insufficient or absent, especially in the first three days of life. It is possible to minimize the early loss of weight and to promote early and regular gains. If the bottle feedings are not forced, are not given until the breasts are emptied, and are discontinued when sufficient breast milk appears to permit daily gains in weight or to measure up to the stomach capacity, there is apparently no adverse influence on the ultimate breast supply. In this group, 69, or 26.9 per cent, left the hospital entirely breast fed; 140, or 54.7 per cent, left on a diet of breast milk with complemental feedings, and 47, or 18.4 per cent, left the hospital entirely bottle fed (table 6). Complemental feedings, after being started, were withheld in 161 infants of this group for a varying length of time when the breast supply increased. When these infants were discharged from the hospital, 58, or 36 per cent, were entirely breast fed; 78, or 48.5 per cent, were breast and bottle fed, and 25, or 15.5 per cent, were entirely bottle fed.

Table 4.—*Amount of Milk Taken Daily During First Ten Days (Average of 63 Infants Above Weight on Tenth Day)*

	Average Intake of Milk in 24 Hours		Average Amount Each Feeding, Cc.	Physiologic Capacity of Stomach (Scammon and Doyle) Cc.
Day	Ounces	Cc.		
1	2.6	78	13	9
2	6.4	192	32	22
3	9.8	294	49	43
4	13.2	396	66	65
5	15.0	450	75	78
6	15.5	465	77	85
7	16.5	495	82	90
8	16.5	498	83	94
9	16.6	498	83	99
10	17.0	510	85	105

Of the remaining 95 infants in this group who received complemental feedings during their entire time in the hospital, on being discharged, 11, or 11.6 per cent, were entirely breast fed; 62, or 65.3 per cent, were breast and bottle fed, and 22, or 23.1 per cent, were entirely bottle fed.

Thus an effort to restrict bottle feedings increased the number of breast fed babies from 11.6 to 36 per cent.

Unrestricted Complemental Feedings.—The third group numbering about 100 infants were observed in the nurseries of two private hospitals. In this group no definite plan was followed. The infants were under the care of various staff physicians. It was almost a routine procedure to start bottle feedings on the second day, sometimes to complement the breast and often to supplant the breast nursing entirely once or twice daily. The majority received the bottle instead of the breast at the night feeding. For the most part, the babies received all they would take of a low caloric food consisting of milk or skimmed milk, water and sugar, or one of the powdered synthetic milks.

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[1] Scammon, R. E., and Doyle, L. O.: Observations on Capacity of Stomach in First Ten Days of Postnatal Life, Am. J. Dis. Child. **20**: 516 (Dec.) 1920.

The figures for weight and intake of food in this group are of no value because of the fact that no definite plan was followed, a variety of milk mixtures was used, no particular effort was made to empty the breast thoroughly and the amount of complemental food taken depended entirely on the infant's appetite. Slightly less than 10 per cent of these left the hospital as breast-fed babies. Many of the charts on this group show that on the fourth and fifth day the breasts were yielding from 400 to 500 cc. daily, and on the ninth and tenth day this had decreased to from 300 to 400 cc. or less. It was apparent that the pushing of artificial food without regard to the quantity obtained from the breast results in a failure of the breast supply.

Table 5.—*Caloric Intake of Infants on Breast with Complemental Food Regaining Birth Weight on or Before Tenth Day of Life*

Weight, Pounds	Calories per Pound
5 to 6	53.3
6 to 7	50.3
7 to 8	47.0
8 to 9	45.8
9 to 10	43.0

COMMENT

To be of much value this study should show what became of the baby in the months following his leaving the hospital nursery. How long was he given breast feeding and with what result? We found it difficult to follow a large series of infants after their first two weeks. Whether they continue with the breast feeding depends a great deal on whom the mother encounters when she seeks advice about the infant's food. Those who are looking for feeding advice early and often are usually giving their infants artificial feedings very early. We attempted such a survey in our outpatient department, but this was of little value, because we observed those who were given bottle feedings principally and relatively few of those doing well on breast feedings.

The most common cause for instituting complemental feedings in the first week of life is a failure to gain. No doubt many infants need complemental food during this period, but failure to gain from day to day does not in itself make necessary the beginning of bottle feedings. A comparison of infants born in the City Hospital with those in private practice leads us to believe that many of the latter are started on bottle feeding without much real effort to keep them on breast feeding. There are several reasons for this fact. The advancement in knowledge of infant feeding during the past decade, the simple and easy methods of preparing infant foods, and the many excellent substitutes for breast milk make the physician prone to resort to artificial food, often too early. The danger of artificial feeding is no longer feared as it was several years ago. In fact, several comparisons that have been made between breast-fed infants and bottle-fed infants recently indicate that the bottle-fed infant does about as well as the breast-fed one.[2] However, for the general population that gets no experienced advice, artificial feeding is not as safe as the previous statement would indicate.

Table 6.—*Two Hundred and Fifty-Six Infants Receiving Complemental Feedings During First Ten Days*

Left Hospital	Number	Per Cent
Entirely breast fed	69	26.9
On breast and bottle	140	54.7
Entirely bottle fed	47	18.4

Is there any advantage in having a baby a few ounces heavier at the tenth day of life? We believe that it is better to have the baby leave the hospital with sufficient food to be contented and thriving, provided it can be done without endangering the breast supply. If a breast-fed infant goes home underweight and not getting sufficient milk, it will not be long before mixed feedings will be started and probably not as well as if the baby had left the hospital receiving carefully regulated complemental feedings.

SUMMARY

A comparison of the weight progress of breast-fed infants and those on carefully controlled complemental feedings shows that the latter usually regain their birth weight more rapidly than those exclusively breast fed.

Thirty-two per cent of breast-fed infants and 67 per cent of babies given breast milk with complemental feedings regain their birth weight on or before the tenth day of life.

When the amount of complemental food is carefully regulated by measuring the intake of breast milk and if it is not given when the breast supply becomes sufficient and never until the breast supply is exhausted, this practice apparently has no adverse influence on the ultimate breast flow. When complemental feedings are given freely or before the baby has emptied the breasts, the breast supply is endangered, and this results in early weaning.

The infants of average weight (7 pounds [3,175 Gm.]) in this group who made satisfactory gains received at the end of their first week of life approximately 500 cc. (16 ounces) of milk each day, or from about 47 to 50 calories per pound of body weight.

214 Medical Arts Building

ABSTRACT OF DISCUSSION

Dr. Eugene Rosamond, Memphis, Tenn.: In 1919, in preparing a paper on breast-fed babies who cry at night, I made a survey of several hundred grandmothers, lasting throughout the period of a year. I found that Grandmother always successfully nursed her baby. I found that Grandmother's babies were all hungry. They had three months of colic, which is hunger. But Grandmother had no specialist to consult, and she persisted in her efforts to nurse her baby. The combination of the hungry baby, the good milker, the persistent demand of nature for more food, finally successfully produced more food. The other side of the picture is also true. Babies learn quickly. Babies learn that some one will soon come with an easy flowing bottle, and there is no use to work so hard for a living. Complemental feeding demoralizes and makes lazy the nursing baby. Complemental feeding also demoralizes and makes lazy the nursing mother. Complemental feeding sooner or later is going to lead to the cessation of breast feeding. This might be heresy, but I would almost be tempted to say, Who cares? I don't believe there is a member of this section who doesn't feel that he can, more comfortably to the baby and to the mother, certainly to the father and himself, feed a baby on a bottle. The breast-fed baby is more apt to be hungry and uncomfortable. The milk supply and the milk content are affected by the emotions, and the vicissitudes of modern life make it hard for the modern mother to emulate the placid cow. Every time she gets mad at her husband, every time she gets excited, every time she gets tired, the mother's milk supply is going to be cut down, and she is going to have a hungry baby.

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[2] Faber, Harold K., and Sutton, T. Leonard: A Statistical Comparison of Breast-Fed and Bottle-Fed Babies During the First Year with Special Reference to Gain in Weight and Morbidity, Am. J. Dis. Child. **40**: 1163 (Dec.) 1930. Glazier, Manuel M.: Comparing the Breast-Fed and the Bottle-Fed Infant, New England J. Med. **203**: 626 (Sept. 25) 1930.

Dr. Robert A. Strong, New Orleans: Since the pediatrician has been able to convince the obstetrician that the baby requires at least as much attention as the placenta, the opportunity for learning many things has been greatly improved. One of the things that have been taken up is what can be done to reduce the loss in weight that up to a few years ago was accepted as being physiologic. I think that most pediatricians have tackled this problem in their service for the new-born, and have been more or less successful. The figures presented by Drs. Dwyer and Neff demonstrate clearly that the problem is one of individual birth. It has occurred to me, since Dr. Weston has given such important information on the minimal content of food, that an additional phase of this problem might be to see just what results would be obtained in improving the breast milk by feeding the mother a food of high mineral content for at least two months before gestation. In any event, I think that this paper has shown that one should use a certain amount of discrimination in tackling these problems and not just simply give dextrose as a routine or some other food for the purpose of minimizing the initial loss of weight.

Dr. Milton Smith Lewis, Nashville, Tenn.: The daily health routine of the lactating mother needs more careful supervision and regulation by the physician, if he is to encourage maternal nursing. In many cases the success or failure of breast feeding depends on the care given the mother's breast. Both the baby and the mother have been through a strenuous ordeal and it is of utmost importance that both should be given proper rest after labor. Placing the baby to the breast too early and too often before milk is present in sufficient quantity often traumatizes the nipples so severely that they easily crack or become fissured, so by the time the milk really comes in the nipples are so painful that the baby cannot empty the breast properly; this discourages the milk flow from lack of proper stimulation. My usual routine is to place the baby to the breast every six hours after from twenty-four to forty-eight hours, depending on the condition of the mother and baby, for only five minutes. This stimulates the breast sufficiently and satisfies the mother's anxiety. As soon as the milk comes in, the baby is placed on the three or four hour schedule. The proper support of the breast during the engorgement stage may be accomplished by the DeBuys breast binder properly applied with the gland well pressed forward on the chest toward the median line and away from the axillary spaces. This will encourage natural drainage with the greatest possible comfort to the mother. In cases in which there is insufficient breast milk from the start, complemental feeding should be instituted as early as possible to prevent further loss of weight. In my experience it has been impossible to increase the quantity of breast milk by regulation of the mother's diet; but, as Dr. Rosamond has brought out, the nervous condition of the mother has often a striking influence on her milk secretion, and when this psychic influence is removed the milk secretion seems to improve and the baby benefits thereby.

Dr. Béla Schick, New York: Having studied the same question for seven years, I came to a conclusion similar to that of the authors. If one gives the new-born child only fluid he looks better than if one leaves him alone, as a flower put in water keeps fresh for a while. But the child is starving and shows signs of starvation: acetone in the urine and in the air of expiration, no stools or stools of a meconium-like character continuing for many days (hunger stool). I studied, furthermore, how the child develops if additional breast milk or different mixtures of cow's milk are given. Breast milk alone or breast milk with the addition of mixtures of cow's milk gave the best results. There is a certain danger that by additional feeding the child becomes lazy and refuses to take the breast; but if the physician insists on continuing the breast feeding the breast feeding can almost always be sustained. We started to feed the child six hours after birth. The child did not get more during the first two or three days than his basal requirement. By forceful feeding one is able to do away almost entirely with the loss of weight which is so often encountered during the first days of life. We restricted the additional feeding to children below 5 pounds in weight. We left the very strong children without this supplementary feeding because these children are in no danger if they lose a little weight. In weaker children a vicious circle occurs. Not taking enough nourishment, they become still weaker and are then less able to nurse sufficiently at the breast.

Dr. C. Ulysses Moore, Portland, Ore.: In the hospital in Portland we avoid having trouble with the nipple by treating them just as nature would, not by putting on any sort of ointment, which at first tends to moisten the tissues and makes infection still more easy than it otherwise would be. We cut two holes the size of a half dollar in the binder for the nipples to go through; this allows the air to get around the nipples and prevents the cloth from pressing down on them and making a moist place where bacteria can grow easily. In several years we have not had 0.1 per cent of infected nipples in mothers in the hospitals. I don't remember a case in several years. Breast expression, as has been brought out so well, I think can well be used. We have another thing to help breast expression. One should teach the baby to depend entirely on the breast for sustenance, even though he may receive milk from the bottle. So we use a number 8 or 10 catheter in the form of a combination breast feeder. Milk or whatever formula is desired is put into the bottle; this tube is put on and the bottle is held upside down; the tip of the little rubber tube is put in the baby's mouth while he is at breast, and the baby pulls at the breast and pulls at the bottle at the same time. That combination breast feeding enables the babies to receive any formula from the breast.

Dr. F. J. Schatz, St. Cloud, Minn.: Speaking from the point of view of both an obstetrician and a pediatrician, I agree with Dr. Lewis in regard to the early nursing of babies. The child should not be put to the breast too soon, because of the danger of sore nipples. One may take whatever care one chooses prenatally, and one does not get results in all cases. Infants should not be put to the breast for the first twenty-hour hours after delivery; the average baby, if he is kept warm and is properly cared for, will sleep the greater part of the time, and all he requires is water. Water should be given freely. The reason for giving water freely is that many infants will not urinate for the first twenty-four to forty-eight hours unless one pushes fluid, which stimulates the action of the kidneys and dissolves the urates. The urine may be highly colored because of the urates that are present. Colic is not always due to lack of food. If one watches the napkins of the early days, one will find that they are stained not only from the urates but also sometimes from blood, indicating the presence of undissolved urates which cut as they pass through the ureters, producing colic. Some years ago I had the opportunity to present before the section of the Central states the case of a child who cried continuously after the first three weeks. When the child was about four months of age he had all the indications of a gastro-intestinal disturbance with kidney complication and passed five stones that were larger than the average pinhead; these were analyzed and shown to contain 90 per cent of ammonium urate. After the passage of the stones, the child no longer cried and made progress. The supply of milk depends on the mother. There are mothers with and without an ample supply. Regardless of what one does about foods, liquids or other treatments, the supply will sometimes remain insufficient. As to feeding, I start my complemental feeding after the first twenty-four hours. The baby is put to the breast before the complemental feeding is given. The average mother will not get her supply of milk for at least forty-eight hours. The baby is weighed before and after each nursing to determine whether he is getting sufficient. If he is not, the breast is expressed, and if there isn't an ample supply, the feeding is complemented.

Dr. Hugh L. Dwyer, Kansas City, Mo.: I said nothing about the importance of fissured nipples in the successful nursing of the infant. This condition is often brought about by the baby nursing at the empty breast. It does not matter much what is used on the nipple or how soon after delivery the baby is fed. In my experience, the time at the breast is the important factor. The baby may be started four, six or eight hours after delivery; but he should not remain there nursing at a breast that has nothing in it. About 40 per cent of the mothers in this group had enough milk on the second day to be of value. The theme of this paper was whether or not one should start a bottle at all in the first week of life. We have come to the conclusion that it should not be started in about two thirds of all babies. The way to find out when the bottle should be started is to weigh the baby before and after nursing. The baby that is doing well gets from the breast about a pint of milk at the end of its first week. If the bottle is started before this time it should be discontinued when the breast milk comes in. In this way one can improve the baby's nutrition in its first week of life without endangering the breast supply.

Clinical Notes, Suggestions and New Instruments

ABDOMINOSCROTAL HYDROCELE

Charles S. Curtis, M.D., St. Anthony, Newfoundland

A man, aged 19, about two years previously received a kick on the scrotum which had become swollen and had remained swollen but had not increased in size. There was never much pain. The patient had dysuria for one night following the accident; micturition was otherwise normal. He never noticed any swelling in the abdomen. There was no cough.

Examination revealed a smooth firm mass in the middle of the lower part of the abdomen, reaching almost to the umbilicus and resembling a dilated bladder in all except tension, being rather softer than a bladder. The right scrotal sac and the inguinal canal were occupied by a semireducible, semitranslucent swelling with a definite impulse on coughing. No testicle could be felt on this side of the scrotum or canal. The left scrotal sac had a normal testicle. Rectal examination was negative.

On catheterization an ounce of residual urine was obtained and the abdominal tumor remained as before.

Under ether, an exploratory laparotomy was done with excision of the cyst of the testicle.

The abdomen was opened in the midline and a tense tumor about the size of a grapefruit was felt in the midline, which seemed to be attached to the pelvic wall; there were a few glands along the iliac arteries. The tumor could not be removed through this wound. The abdomen was closed in layers without drainage.

Specimen removed at operation, consisting of sac of abdominoscrotal hydrocele.

Another incision was made through the right external ring, exposing the testicle and sac. A trocar was inserted into the sac, and several ounces of straw colored fluid was obtained, and the tumor in the abdomen disappeared. A finger was then inserted into the enlarged opening, and the beginning of a huge hydrocele was found, probably congenital, which had pushed up through the internal ring into the abdominal cavity. By blunt dissection this sac was gradually excised in the usual manner. This sac, together with the testicle, was removed in the usual manner with a great deal of bleeding. The wound was closed in layers without drainage.

Seven days later the stitches were removed. The wound had healed well. There were no complications.

TRAUMATIC RUPTURE OF LEFT RENAL ARTERY WITHOUT INJURY TO KIDNEY

P. K. Edmunds, M.D., Los Angeles

The finding of a ruptured left renal artery following trauma and without grossly demonstrable kidney damage or hematuria is rare. This is particularly true in the absence of predisposing changes in either the kidney or the vessels, or where no abnormal mobility of the kidney could be demonstrated.

In a review of the literature, relatively few cases of rupture of renal vessels are reported and very few cases of traumatic rupture in a vessel otherwise apparently normal. Lincoln[1] reports fifteen cases prior to 1918 of spontaneous rupture of renal vessels (arteries), fourteen collected from the literature and one his own case. Two of the patients were children, one was a young adult, and the remainder were elderly people in whom could be demonstrated predisposing pathologic changes in the vessels, for the most part of arteriosclerotic and syphilitic nature. Hematuria was present in four cases and was profuse in three. Greenwood[2] reports a case occurring in a boy, aged 14, who was thrown against a tree while sleighing, striking his left lower anterolateral chest wall and flank. It is interesting to note that in this case there was little or no evidence of shock until fifteen hours later. At this time there was rigidity of the entire upper abdomen, with tenderness in the left upper quadrant. A preoperative diagnosis of ruptured spleen was made. Exploratory operation revealed a few subcapsular hemorrhages in the left kidney, and the left renal artery was torn completely across at the hilus. Thrombosis had occurred, arresting the hemorrhage. The patient recovered. In Atkinson's[3] case the kidney was hydronephrotic and the vessels much smaller than normal. The patient was a youth, aged 18, who fell while playing cricket and pushed his elbow into his left side. Pain was slight and the patient continued playing. Next day the left side was stiff and painful and there was gross hematuria. The left abdomen and flank were found to be rigid and tender. At operation there was found hydronephrosis of the left kidney, and the (small) renal vessels were torn. Hemorrhage had ceased spontaneously by thrombosis within the vessel walls. Berhouet[4] in 1926 reported a case of partial tear in the left renal artery from severe traumatism of the left hypochondrium. Beach,[5] in reporting ten cases of traumatic rupture of the kidney, refers to tears in the renal pedicle as being rare and refers to the work of Dr. McDonnell, Sacramento County physician, who in fifteen years had observed at autopsy only ten cases presenting torn pedicles, all with other grave concomitant lesions, such as ruptured liver or spleen. In each case, death had occurred within a brief interval following the injury. In none of the ten cases reported by Dr. Beach was there any tear of renal vessels, although in one case a neighboring mesenteric vessel had ruptured. The case reported here was considered of unusual interest and singularity, particularly because of the absence of preexisting disease of the vessels or abnormal mobility of the kidney.

REPORT OF CASE

History.—C. S., a white man, aged 45, married, a carpenter, was brought to the Golden State Hospital by ambulance, Dec. 21, 1931, after falling from a scaffold about 25 feet from the ground. He was unconscious for a brief interval, during which time he was given first aid by a near-by physician and within two hours was admitted to the hospital. On admission he was found to be in extreme shock; the pulse was rapid and thready, the skin surface pale, moist and cold. The body temperature was subnormal and the blood pressure reading was 95 systolic and 75 diastolic. There were superficial abrasions over the left side of the face and scalp, and discoloration about the left eye. The patient complained of pain in the left upper abdominal region, and on palpation acute tenderness was elicited over

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1. Lincoln, W. A.: Spontaneous Rupture of Renal Artery, J. A. M. A. **70:** 80 (Jan. 12) 1918.

2. Greenwood, A. H.: Severe Renal Trauma with Rupture of Renal Artery; Absence of Hematuria, Canad. M. A. J. **16:** 1500 (Dec.) 1926.

3. Atkinson, E. M.: Rupture of Renal Artery and Vein by Slight Injury: Operation and Recovery, Brit. M. J. **1:** 324-325 (Feb. 24) 1923.

4. Berhouet, A.: Serious Traumatism of Left Hypochondrium with Partial Tear of Renal Artery, Ann. de Fac. de méd. Montevideo **11:** 387-394 (June) 1926.

5. Beach, E. W.: Traumatic Rupture of Kidney: Ten Cases, California & West. Med. **33:** 494-502 (July) 1930.

this area and to a lesser degree, though still quite moderate, over the course of the descending colon and in the left flank. Mild rigidity of the left rectus muscle was suggested at the time and became definitely demonstrable within the course of an hour or two. During this time measures against shock were instituted pending surgical consultation and laboratory study. Examination of the urine revealed a trace of albumin and several hyaline casts but was otherwise negative. The blood count revealed a hemoglobin reading of 80 per cent; the red cell count was 3,980,000 per cubic millimeter, the white cell count 29,960. A differential count gave 10 per cent lymphocytes, 86 per cent polymorphonuclears and the remaining 4 per cent monocytes and transitional cells. Blood study repeated an hour later showed no appreciable change.

Operation.—An exploratory operation was considered indicated and a left rectus incision in the upper part of the abdomen was made under gas-ether combined anesthesia and the abdominal cavity was explored. The spleen was found ruptured transversely: the upper pole lay free in the abdomen, the lower pole was split into two segments but remained attached to the pedicle. There was a large amount of blood in the abdominal cavity, and in addition there was a subserous hemorrhagic extravasation over almost the entire extent of the descending colon. This was thought to have had its origin from the splenic area and to have gravitated downward behind the peritoneal covering of the bowel. There was a small rent about 1½ inches long in the serosa at about the midpoint of the descending colon. No further pathologic changes were found. The spleen was removed and its pedicle securely ligated. Most of the blood was sponged out of the abdomen and the incision closed without drainage.

Postoperative Course and Treatment.—During the operation the patient's condition was very poor and for a while he was almost pulseless. Venoclysis and stimulants were given during the operation and afterward, and subsequently up to the time of the patient's death. A 2.5 per cent dextrose solution in physiologic solution of sodium chloride was used and supplemented by fluids by hypodermoclysis. Occasionally an ampule of epinephrine hydrochloride was added to the solution when the blood pressure was very low. The postoperative course was stormy. On the eve of the first day the pulse was scarcely perceptible and the blood pressure reading could not be accurately determined. An occasional sound was heard at 75 mm. Following venoclysis with dextrose solution to which epinephrine was added, the pulse improved and the pressure reading was taken at 90 systolic and 60 diastolic. Solution of pituitary was given with the object in view of supporting the circulation and of helping to relieve ileus, which became pronounced soon after operation and continued so despite all measures to overcome it. The patient belched frequently and was restless most of the time. His respirations were hurried, short and associated with an expiratory grunt. The lungs, however, remained clear. The day after operation, his condition seemed improved generally: His blood pressure rose to 120 systolic and 80 diastolic, and the pulse was of fairly good quality, though rapid. Locally, abdominal distention persisted despite enemas, gastric lavage and stupes. The patient took fluids by mouth quite freely. The temperature was moderately elevated and remittent throughout. The patient was frequently stuporous but rational for the most part, and there were no neurologic observations definitely indicating intracranial involvement. Despite an apparently definite tendency to improve which the patient demonstrated on the second and third days after operation, he suddenly and rapidly lost ground on the fourth morning and died within an hour.

Autopsy.—The following is an excerpt from the coroner's report: "The abdomen contained a small amount of free blood. The spleen was missing, apparently by reason of surgical removal, and the operative site and ligatures were found to be in excellent condition. There was moderate roughening of the peritoneum covering the intestines, slight recent adhesions in places and localized streaks of reddening of the peritoneum. The left renal artery was found to be partly torn across near the aorta with the formation of a large retroperitoneal hematoma. The artery was thrombosed with consequent arrest of hemorrhage." The cause of death was given as shock and exhaustion following traumatic rupture of the spleen with splenectomy. There was no evidence of injury to the kidney substance.

COMMENT

The mechanism by which an otherwise normal-appearing renal artery attached to a normally anchored kidney (which was grossly uninjured) might be torn by trauma is worthy of speculation. This is made more enigmatic when it is recalled that the urine contained no red cells grossly or microscopically demonstrable. The force of impact must have been considerable in a fall of 25 feet, and this is borne out by the finding of a shattered spleen. From external appearances it would seem that the patient landed on his left side, probably in a left anterolateral and horizontal plane, since there was no evidence of fracture of any bones, and the neurologic examination was essentially negative. I believe that the patient died as a result of delayed and prolonged shock and exhaustion and not from hemorrhage or as a result of the added shock of operative intervention, since at autopsy it was found that the operative site was in good condition and that the torn renal vessel was thrombosed, with resultant arrest of hemorrhage. Moreover, there was no evidence of infection or leakage of urine in the retroperitoneal region. It is interesting to note that in all other cases of rupture of the renal vessels here reviewed, thrombosis had occurred with arrest of bleeding. Doubtless the extremely low blood pressure noted at times in this case was nature's protective mechanism in aiding thrombosis in the injured vessels. One wonders if it wouldn't be wise in such cases to curb one's eagerness to bring the blood pressure back to a normal level so soon after severe trauma if there is suspicion of a ruptured vessel. In certain cases such efforts may militate against nature's mechanism. On the other hand, where operative intervention is considered, an attempt should be made to counteract shock preoperatively as well as after operation, and that was done in this case. Even had the patient survived the injury, subsequent changes in the left kidney—cut off from its blood supply—would have made a later operation necessary.

423 Towne Avenue.

SENSITIVENESS TO CORN SHUCK

W. W. Duke, M.D., Kansas City, Mo.

The following case is interesting in showing high grade sensitiveness to the shuck, silk and dust from corn in the absence of sensitiveness to the pollen, the grain or corn smut:

A youth, aged 20, had had summer hay fever and asthma for several years. The hay fever symptoms were mild, however, as compared with the asthmatic symptoms. The history disclosed the fact that the symptoms came on while he was occupied in the care of cattle and were found on observation to occur about an hour after the handling or shucking of corn or after exposure to corn dust.

The patient was tested with several hundred materials and gave negative reactions to all of them including corn and other cereal proteins; also negative reactions to corn pollen and other pollens and to several of the fungi and spores including corn smut. He gave intensely positive tests, however, to extracts made from the shuck of corn, from corn silk, and from the dust scraped up from corn bins. Each extract gave intensely positive scratch tests even when used in high dilution. The patient was insensitive to acetone extracts filtered through stone but reacted positively to invisible particles in unfiltered clear extracts.

The patient was treated with an extract made by extracting dry corn shuck, 1 : 10 suspension, in glycerin and Coca's solution. Subcutaneous injection of 0.2 cc. of a 1 : 100 dilution of this mixture gave rise both to a large local reaction and to definite symptoms of hay fever and asthma. Treatment with ascending doses of the extract carried out over a period of three months gave rise to such tolerance that scratch tests with the strongest extracts were practically negative and exposure to corn dust in his occupation of feeding cattle had little ill effect unless exposed to excessive amounts while shucking corn.

This case is analogous to a timothy case reported by Cooke in that his patient was sensitive to an extract of timothy hay but did not react to timothy pollen.

SUMMARY

A patient who had coryza and asthma on contact with dust from corn cribs was found sensitive to extracts of the shuck, silk and dust from corn but was not sensitive to the pollen or grain or to the fungus corn smut.

Relief was obtained by specific therapy combined with partial avoidance of corn dust.

820 Professional Building.

ENDOMETRIOMA OCCURRING IN A POSTCESAREAN LAPAROTOMY SCAR

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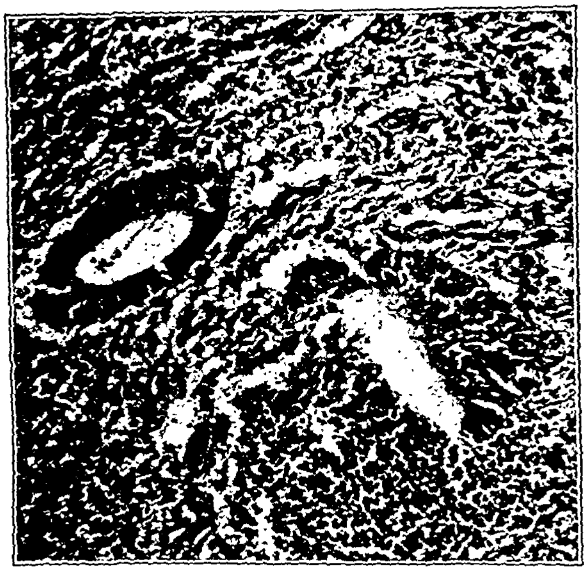
The occurrence of endometriomas in laparotomy scars, especially those following cesarean section, is sufficiently rare to warrant reporting. There have been a number of good reviews of the literature by Nicholson,[1] Heaney,[2] Lemon and Mahle,[3] Vassmer,[4] Pratt,[5] and more recently Hosoi and Meeker,[6] which indicate that there are less than a hundred such reports available. Hosoi and Meeker,[6] who have collected eighty-seven cases of endometriomas occurring in laparotomy scars, report only twenty-one in which the pregnant uterus had been opened. It is interesting that cesarean section plays such a relatively small antecedent rôle in the formation of these tumors. Possibly the decidua is not adapted for independent growth immediately after parturition, when all pelvic structures are undergoing involution.



Section of tumor mass removed from laparotomy scar; × 400.

REPORT OF CASE

History.—A white woman, aged 31, a secundigravida, reentered the obstetric and gynecologic service of the University Hospital, March 18, 1930, complaining of a lump in an old laparotomy scar. Six years before admission, cesarean section through a right rectus incision had been done elsewhere because of a congenital dislocation of the right hip. One year later a second cesarean section was done in our service through a midline incision. Convalescence from each of the operations was uneventful.

Present Illness.—About three years after the first intervention and three years before the present admission, a small lump, which slowly increased in size, was noticed at the upper angle of the right rectus scar. The tumor recently varied from the size of a hazel-nut in the intermenstrual period to the size of a walnut at the catamenia. Although pain was a constant feature, it was minimal during the intermenstruum and acquired annoying proportions only at the menses.

Examination.—There was a spherical mass about 2.5 cm. in diameter at the upper end of the old right rectus scar, and the overlying skin had a slight reddish-blue tinge.

Operation.—The mass was found to be adherent to the superficial surface of the fascia and was easily removed by blunt dissection. There was no connection with the pelvic structures.

Pathologic Examination.—Gross: The cut surface of the tumor showed small hemorrhagic cystic areas separated by numerous small white strands of tissue. Microscopic: In a mass of connective tissue and fat there were several cavities filled with red blood cells and lined by epithelium resembling endometrium. In several instances there were normal appearing endometrial glands with typical supporting stroma.

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[1] Nicholson, G. W.: J. Obst. & Gynaec. Brit. Emp. **33**: 620-633, 1926.

[2] Heaney, N. S.: Am. J. Obst. & Gynec. **10**: 625-630 (Nov.) 1925.

[3] Lemon, W. S., and Mahle, A. E.: Ectopic Adenomyoma: Postoperative Invasions of the Abdominal Wall, Arch. Surg. **10**: 150-162 (Jan.) 1925.

[4] Vassmer, W.: Arch. Gynäk. **123**: 187-210, 1925.

[5] Pratt, J. P.: J. Michigan M. Soc. **26**: 82-85 (Feb.) 1927.

[6] Hosoi, Kiyoshi, and Meeker, Louise H.: Endometriosis, Arch. Surg. **18**: 63-99 (Jan.) 1929.

Special Article

VITAMIN E

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[EDITORIAL NOTE.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

One of the most remarkable results of nutrition researches in the last decade has been the demonstration that laboratory animals (rats, mice) can be successfully reared on simplified dietary mixtures consisting of protein, fat, carbohydrate, salts and the vitamins hitherto known and that, although healthy adulthood is reached, sooner or later such animals lack entirely the power of reproduction; i. e., sterility supervenes.

DISCOVERY OF VITAMIN E AND ITS CONFIRMATION

In 1921, having been previously concerned with the precise mechanism of the estrous cycle in the rat, Evans and Bishop[1] began to study dietary influence on the ovulatory rhythm and on the various steps in the physiology of reproduction. To their surprise they found that on supposedly complete dietaries, and with both growth and external appearance normal, animals would also exhibit normal estrous cycles and would breed, ovulate and conceive, yet be unable to experience a normal gestation through the invariable occurrence of fetal death. Elevation in the proportion of each of the constituents of the diet and especially great increase in the amounts of vitamins A, B and D[2] was without effect, yet various natural foods proved curative in the next following gestation. Since the fresh leaves of lettuce were

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The researches here summarized have now engaged the attention of students of the subject at such widely distant points that they may be said to have been adequately confirmed and extended. The writer is indebted to the work of collaborators—to Katherine Bishop, George O. Burr, Theodore Althausen, Marianne Goettsch and others, and acknowledges specially the aid given the present compilation by Samuel Lepkovsky, Elizabeth Murphy and Robert E. Cornish.

[1] Evans, H. M., and Bishop, Katherine S.: On the Relations Between Fertility and Nutrition: II. The Ovulation Rhythm in the Rat on Inadequate Nutritional Régimes, J. Metabol. Research **1**: 319 (Feb.) 1922; 335 (March) 1922.

[2] The rat does not need vitamin C.

potent, it appeared at first as if the antiscorbutic vitamin C, not known to be needed by the rat, could possibly be implicated; but the speedy accomplishment of similar "cures" with dry cereals, e. g., whole wheat, notably deficient in C, pointed clearly to the detection of the need for a new substance, and since in the case of some food materials (e. g., wheat germ) the requisite quantity was small and extracts of those foods were efficacious, the discoverers[3] felt justified in announcing the existence of a new, fifth, member of the vitamin class, to which the designation X provisionally and later E was attached. The intervention of such a vitamin in the physiology of the test animals (rats, mice) has been abundantly proved, but the extent of need for this on the part of other species is still a subject for investigation.

It is interesting that while experimenting with other food mixtures and engaged in other aims, essentially the same conclusion and interpretation was quickly reached by Barnett Sure[4] and by H. A. Mattill,[5] and the work of these investigators appeared so promptly that they must almost be reckoned with the original finders as promulgating the new conception and securing for it at once favorable attention. Confirmations of the need for the vitamin in the male by Karl Mason[6] and in the sexual physiology of the mouse by H. H. Beard,[7] both from Mendel's laboratory, were of great importance in the early history of this study. Critics at first hostile to the postulation of a fertility or antisterility vitamin have now entirely acceded to the interpretation[8] and in the last few years twenty or more researches have extended this verification, among which may be mentioned those of Hogan and Harshaw,[9] Daniels and Hutton,[10] Kennedy,[11] Suzuki,[12] Tso,[13] Verzár[14] and Juhász-Schäffer,[15] as well as of Sure, Mattill and Mason.

IMPORTANCE OF METHODS OF STUDY OF THE PHYSIOLOGY OF REPRODUCTION

Little information of value is gained by merely placing the sexes together and observing that animals do not beget young when held on certain diets. The study of upset in the female reproductive mechanism due to diet cannot be analyzed satisfactorily except by the employment of males of proved fertility and the careful observation of the female to ascertain:

1. The occurrence of estrus by means of vaginal smears.
2. The occurrence of copulation, by the finding of the bouchon-vaginale or male's plug in the vagina or of residual sperm in the vaginal contents.
3. The normal course of early pregnancy, i. e., the cessation of estrous cycles as determined by daily study of the vaginal smear, *up to and including implantation* as detected by the erythrocyte sign.
4. The course of later pregnancy either (*a*) normal or involving (*b*) resorption of the young (characteristic for sterility due to inadequate E) or (*c*) impairment of the birth mechanism (characteristic, for example, for some stages of sterility due to inadequate vitamin A).

Resorption is best detected by isolation of the female and the institution of daily weighings for at least five days, from days 20 to 25, and the finding of a more gradual decline in the mother's weight than is found in the precipitous drop at parturition.

One must, furthermore, after detection of one or more typical resorption gestations, prove that the reproductive mechanism is perfect when E is now conveyed to the mother.

Normal young females begin life with their tissues already possessing certain amounts of vitamin E, which was conveyed to them in intra-uterine life by their mothers; this is readily ascertained by killing such young and feeding them to E sterile mothers. If, now, such animals are reared on a regimen deficient but not wholly free of vitamin E, they are able to accumulate further traces of E in their tissues and for that reason may be able, *if bred early in life* (*sixtieth day*), to cast one or more normal litters. We have called this phenomenon "initial fertility." It is unfortunate that it may regularly occur with diets which are nevertheless so deficient in E that the second or third gestation is a sterile one. The phenomenon has doubtless led some investigators to challenge the existence of E, and it alone, besides the loss of time, would furnish ample reason for the adoption of the "curative" rather than the "prophylactic" method of determining whether any food is rich or poor in vitamin E. The phenomenon of initial fertility may always be circumvented when a diet is really freed of contaminating traces of E either by (1) rigorous extraction of the dietary constituents by alcohol and ether or other solvents of E but more conveniently by (2) the use of a slightly rancid fat—the rancid substances acting in a remarkable way to catalyze oxidative destruction of whatever E may be present (discussed later in the section on vitamin E and naturally occurring antioxygens).

The accidental employment of slightly rancid lard undoubtedly aided the original discovery of sterility due to lack of vitamin E, and the final recognition of its manner of action cleared up an important chapter in the controversy over the existence of E, since some investigators (as Nelson), pointing clearly to the increased sterility when more lard was employed, at first adopted the seemingly preferable hypothesis of direct injury by the fat per se.

CHARACTERISTICS OF STERILITY DUE TO DEFICIENCY IN VITAMIN E

One of the most striking aspects of the sterility of animals due to lack of fat-soluble E is the differing effect of this lack on the two sexes: in the male, the germinal cells, i. e., the seminiferous epithelial cells degenerate completely; in the female, no degeneration of ova can be demonstrated—indeed, it would appear that a deleterious influence of the lack of the vitamin *is not shown* by the ova or other ovarian tissue, but only by the developing embryo.

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[3] Evans, H. M.: On the Existence of a Hitherto Unrecognized Dietary Factor Essential for Reproduction, Science **56:** 650, 1922.

[4] Sure, Barnett: Dietary Requirements for Reproduction: II. The Existence of a Specific Vitamin for Reproduction, J. Biol. Chem. **58:** 693 (Jan.) 1924.

[5] Mattill, H. A., and Stone, N. C.: The Nutritive Properties of Milk with Special Reference to Reproduction in the Albino Rat, J. Biol. Chem. **55:** 443 (March) 1923.

[6] Mason, K. E.: Testicular Degeneration in Albino Rats Fed a Purified Food Ration, J. Exper. Zool. **45:** 159, 1926.

[7] Beard, H. H.: Studies in the Nutrition of the White Mouse: The Relation Between Diet and Reproduction, Am. J. Physiol. **75:** 682 (Feb.) 1926.

[8] Nelson, V. E.; Jones, R. L.; Adams, G., and Anderegg, L. T.: Cod Liver Oil as Food-Observation on Existence of Vitamin E, Indust. & Engin. Chem. **19:** 840 (July) 1927.

[9] Hogan, A. G., and Harshaw, H. M.: Some Relations Between Fertility and the Composition of the Diet, Missouri Agric. Exper. Stat. Res. Bull. **94,** 1926

[10] Daniels, Amy L., and Hutton, Mary K.: The Fertility of the White Rat on Purified Rations, Proc. Soc. Exper. Biol. & Med. **23:** 225, 1925.

[11] Kennedy, W. P.: Reproduction and Diet in the Rat, Quart. J. Exper. Physiol. **16:** 281 (Aug.) 1926.

[12] Suzuki, Umetaro; Nakahara, Waro, and Hashimoto, Nabetaro: Reproductive Failure of White Rats in Synthetic Diets, Scient. papers Inst. Chem. Res. (Tokyo) **7:** 143, 1927; Proc. Imperial Acad. (Japan) **3:** 619, 1927; Sterility of White Rats Maintained on Certain Synthetic Diets, Japan M. World **8:** 31 (Feb.) 1928.

[13] Tso, Ernest: Effects of Synthetic Diets on Fertility and Lactation, Proc. Soc. Exper. Biol. & Med. **24:** 465 (March) 1927.

[14] Verzár, F.: Die Wirkung von E Vitamin auf die Hypertrophie des Uterus, Arch. f. d. ges. Physiol. **227:** 499, 1931.

[15] Juhász-Schäffer, A.: Arbeiten über das E-Vitamin: I. Veranderingen der Keimdrüsen Während der E-Avitaminose, Virchows Arch. f. path. Anat. **281:** 3 (June 23) 1931; II. Wirkung des E Vitamins auf Explantate in vitro, p. 35; III. Versuche über die Frage der "Ex non won," p. 46; IV. Untersuchungen über den Vitaminingehalt der Faeces, p. 53.

Female.—Striking proof that the early phases of the reproductive process do not need vitamin E is afforded by the resuscitation and in fact the complete normality of young in gestations when the curative dose of E is not administered until a few hours before implantation of the blastodermic vesicles—an administration as late as the completion of the fifth day after copulation. The vesicles are attached to the uterine mucosa some time early in the sixth day. Althausen,[16] who has made a careful examination of both embryo and placenta at all stages of E-low gestations, was in fact unable to discover stigmas of abnormality until the eighth day. It is also a matter of extreme interest that if a sufficiently high curative dose of E is administered on the fifth day, a single administration is adequate, doubtless because of the storage[17] of E in various depots (musculature, fat). This has turned out to be very convenient for the biologic chemist who, in his efforts to concentrate and to isolate the pure vitamin, must be concerned with infinitesimally small amounts,[18] difficult to subdivide in daily doses, and there is a further boon conferred by the efficacy of the single administration—for unless daily dosage is always with fresh material, the tendency to degeneration of E when mixed with any diluent and exposed to the air can hardly be avoided. Though the fetal rather than the maternal tissue in the placenta shows elective disorder when E is low or absent, there are indications that the maternal mechanism is abnormal in a strange tendency of the uterus in such females to form spontaneous nodular deciduomas[19] when pseudopregnancy is provoked by copulation with a vasectomized male.[19a]

Male.—The production of sterility in the male usually occurs at a later date than in his littermate sisters, but when it is once detected it is extremely difficult to cure—for even if immediately thereafter a dietary regimen high in E is instituted, few more than a fourth of the animals can be restored to fertility—the other three fourths suffering continued loss of the tubular epithelium and irreparable loss of vitality of the basal spermatogonia themselves—until only diminutive tubules devoid of all cells save Sertoli elements finally remain. The occurrence and progress of male sterility is, of course, established by following the results of copulations with females of proved fertility; but it is interesting that it can be predicted by the finding of highly characteristic parallel "sheaves" or clumps of immotile spermatozoa in the fresh ejaculate. The E-free sterility of males is invariably prevented even if cured with difficulty by the inclusion of a small amount of E in the "pure" diet on which such animals are reared. For the insurance of fertility throughout life, the requisite daily inflow of E exceeds that required for the embryos in gestation; the seminiferous epithelium, then, in proportion to its mass, has higher requirements for E, a fact difficult to correlate merely with the rate of cell division or protoplasmic growth, which is certainly greater in the embryos. More than ordinary interest attaches to the fact that, although sterile, E-free males, even in cases in which the testicular epithelium has already largely disappeared, for a long time continue, as do cryptorchid animals, to evidence *normal sex interest* and power to copulate; in consonance with this is their possession of normal accessory organs of reproduction, i. e., normal seminal vesicles, prostate and coagulating glands. These observations lend powerful support to the view that the male sex hormone (i. e., that governing behavior and the assumption of the secondary characteristics of sex) is not secreted by the actual germ cells of the tubules but by other elements of the testis.[20] The only remaining elements are the Sertoli cells of the tubules and the intertubular, so-called interstitial or Leydig elements, and Kudrjaschov[21] believes that he has produced evidence that the Sertoli cells must elaborate the male sex hormone. *Finally, in the male* there supervenes a complete lack of all sex interest and degeneration of the accessory organs.

COMPARISON WITH REPRODUCTIVE IMPAIRMENT DUE TO DEFICIENCY IN OTHER VITAMINS

The sterility due to inadequate amounts of the antisterility vitamin, fat-soluble E, should not be confused with other dietary sterilities, for though much remains to be known of them it can already be said that other types of sterility almost never give the characteristic picture for male and female which has been described as due to low E. The study of other dietary sterilities has not been neglected, as the work of Evans[22] as well as that of Mason[6] and others included them in its scope, but a sufficiently careful analysis of them is still in its incipience.

1. *Comparison with Inadequate A.*—It is due more particularly to Sherman and his students that the discovery has been made that inadequate vitamin A always leads to impairment of reproduction although conferring for a time approximately normal growth and health.

So definite, in fact, is the relation of adequate A to normal reproduction that Sherman[23] challenges the appropriateness of designating vitamin E as *the* fertility vitamin. Yet in the case of the impairment of reproduction due to low A, no particular feature or phase of the process can be or as yet has been picked out as peculiarly deficient as is the case with E. With graver lack of A, Evans and his collaborators[24] have shown that a characteristic change occurs in the cells of the vaginal smear which are now only cornified elements and that this sign is found in no other type of dietary deficiency. If gestation ensues, animals suffering from low A, while occasionally exhibiting resorptions,[25] usually carry their young to term or slightly beyond, exhibiting an obscure impairment of the birth mechanism which ordains fetal death. Again, it is characteristic of other phases of impoverishment in A, for rhythmic estrus to be shown which is obscured by the continuous cornified smear but evidenced by the recurrence of copulation. Even though conception does not occur, the estrous cycle is not appreciably lengthened, so there is obscure involvement of that endocrine mechanism which establishes pseudopregnancy after infertile copulation. Inadequate A in the male leads, as is the case with low E, to testicular degeneration, as Mason[26] and Evans[27] have shown; yet, as Mason pointed out, a characteristic difference even here can be demonstrated in the fact that injury to the seminiferous epithelium from low A is not irrevocable as in low E, for dietary "cures" with high A lead fortunately in a high percentage of cases to regeneration and complete reinstatement of the tubular epithelium.

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[16] Althausen, Theodore, cited by Evans and Burr (footnote 56).

[17] Storage will be discussed later.

[18] R. E. Cornish has in fact effected sterility cures in E-free females with the single administration of as little as 1 mg. of a chemical fraction out of wheat germ oil, as discussed later.

[19] The deciduomas betray their presence by early hemorrhage into the uterine lumen and the consequent detection of blood in the vaginal smear, usually on the ninth or tenth day—some three or four days before the "placental sign" of a normal gestation.

[19a] Evans, H. M.: Spontaneous Deciduomata in Pseudopregnancy with Low Vitamin E, Am. J. Physiol. **85**: 149 (May) 1928.

[20] In harmony with this is the effect of the gonad-stimulating hormone of the anterior hypophysis on males, in which increase of sex interest and potentia and hypertrophy of the accessories occurs, though only if the testis is present but in which little demonstrable change in the seminiferous epithelium takes place.

[21] B. A. Kudrjaschov (Das Vitamin E und die Produktion des Testicularhormones, Endokrinologie **7**: 91 [July] 1930) feels that in the final stages of such male sterility the loss of sex interest and potentia is correlated not only with atrophy of the accessory organs but also with coincident atrophic changes detectable in the Sertoli cells and that a similar correlation with the Leydig cells cannot be made.

[22] Evans, H. M.: Effects of Inadequate Vitamin A on Sexual Physiology of Females, J. Biol. Chem. **77**: 651 (May) 1928; Effect of Inadequate Vitamin B on Sexual Physiology in Male, J. Nutrition **1**: 1 (Sept.) 1928. Mattill, H. A.: Relations of Vitamins B and E to Fertility in the Male Rat, Am. J. Physiol. **79**: 305 (Jan.) 1927.

[23] Sherman, H. C., and Smith, S. L.: The Vitamins, New York, Chemical Catalog Company, Inc., 1931.

[24] Evans, H. M.: On an Invariable and Characteristic Disturbance of the Reproductive Function in Animals Reared on a Diet Poor in Fat-Soluble Vitamin A, Anat. Rec. **23**: 17, 1922.

[25] Not usually, however, as Barnett Sure asserts (Dietary Requirements for Fertility and Lactation: I. A Dietary Sterility Associated with Vitamin A Deficiency, J. Agric. Research **37**: 87, 1928).

2. *Comparison with Sterility Due to Inadequate Vitamin B.*—Evans and Bishop,[1] Parkes[28] and others have shown that inadequate B causes a characteristic cessation of estrous cycles in the female, so that copulation cannot occur; nor is there evidence of normal growth and ripening of the ovarian follicles. Consequently, in these cases even the necessary initial steps in reproduction are repressed. The male also shows complete repression of sex interest, but the testis, unlike the case with A and E, is not selectively hurt; Parkes[28] suggested that low B probably acts primarily to injure the hypophysis, since the administration of the hormone of this gland will awaken sex interest even in ill animals and although Marrian and Parkes[28a] were unable to show impairment of such hypophyses, Evans and Simpson[29] showed that such glands are actually lacking in the gonad-stimulating hormone.

EVIDENCE OF THE STORAGE OF VITAMIN E AND ITS WASTAGE IN NORMAL METABOLIC PROCESSES

Proof of the storage of the antisterility vitamin is given by the direct detection of the vitamin in the tissues of healthy animals (chiefly fat and musculature) by feeding such tissues to, and thus curing, females of proved sterility. The feeding of similar tissues from animals reared without E can never invoke such cures. That storage occurs is further indicated by the survival of fertility in females given appreciable amounts of E and then shifted to an E-free regimen; the length of survival of fertility is strikingly correlated with the richness of E in the initial regimen. Animals reared on natural food diets, which possesses entirely adequate though not abnormally high E, can thus suffer the complete cessation of E inflow and yet maintain fertility for some four or more litters, a significant fraction of their normal life span. It is interesting that the wastage[30] of E occurs in normal metabolic processes and not through the special use of E by the fetus, for when animals are not submitted to the drain of repeated pregnancies their store of vitamin E is not conserved thereby, for it does not persist longer than it does in their frequently bred sisters.

EFFECTS OTHER THAN STERILITY PRODUCED BY INADEQUATE E

It will probably be ultimately demonstrated that all vitamin deficiencies lead to "constitutional" mal-effects which are widespread, that in disorders such as beriberi, scurvy and even rickets the structural and functional disturbances produced cannot be confined to a single mechanism or a single tissue. Nevertheless, it was a surprise to discover[31] the existence of a peculiar nervous impairment and paralysis in a high percentage of the suckling young born from mothers which had been supplied barely enough vitamin E to complete gestation successfully. The disorder was prevented by feeding high E to a mother throughout her lactation; by increase in no other vitamin or dietary constituent could such prophylaxis be effected. Our[31] experience was extensive and it would appear also to establish irrefutably the secretion of vitamin E by the mammary gland.

It became evident that lack of vitamin E affected the body deleteriously in a more general way than merely by injury to the reproductive system as soon as large numbers of animals were reared and held on E-free diets until well past the first year of life. Such animals invariably present a poorer appearance than do their littermates reared and held on an identical regimen save for the inclusion of small amounts of vitamin E (wheat germ oil) in the diet. The condition of the hair of such animals indicates lack of normal health; they frequently show muscular atrophy and above all their weight is always conspicuously less than that of their E-fed controls; it is evident that whereas the early phases of body growth are not impaired by lack of E, late growth phases are so impaired.[32] The view is tenable but hardly probable that early growth can go on because of the initial stores of E received by all animals during intra-uterine life and during the period of suckling. Comparable with the need of the embryo for E is the acceleration of the growth of tissue cultures when E is present, reported by Juhász-Schäffer.[15]

Considerable interest was at one time elicited by a false indication that E might play an important rôle in the utilization of iron or in the hematopoietic function (discussed later in section on vitamin E and naturally occurring antioxygens). Hogan and Harshaw,[9] however, had been unable to show an indication of anemia in females undergoing resorption of their fetuses from lack of vitamin E. Evans and Kohls[33] then conducted a careful examination of the blood of animals sterile through lack of vitamin E without finding any indication of disturbance of hematopoietic function; similar results were obtained by Nelson[34] and further confirmation came in the work of Sure.[35]

EFFECT OF OVERABUNDANCE OF VITAMIN E

The rôle of vitamin E in the reproductive process seemed sufficiently well established to lead to little expectation that an overabundance of it could "heighten" fertility, i. e., lead to the birth of larger and better litters. There was no evidence whatever that with low E the ovary was impaired in its power to mature and discharge the normal number of eggs at any ovulation period. The intervention of E seemed to depend essentially on obscure fetal need for the substance and it appeared *a priori* unlikely that high E could be reflected in larger litters unless there was a considerable and late prenatal mortality in all normal cases due to inadequate E. As a matter of fact the reproductive performance of animals given from twice to twenty times the amount of vitamin E required for normal reproduction did not exceed the norm.

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[26] Mason, K. E.: The Specificity of Vitamn E for the Testis: I. Relation Between Vitamins A and E, J. Exper. Zool. **55**: 101, 1930.

[27] Evans, H. M.: Testicular Degeneration Due to Inadequate Vitamin A in Cases Where E Is Adequate, Am. J. Physiol. **99**: 477 (Jan.) 1932.

[28] Parkes, A. S.: The Nature of the Anestrous Condition Resulting from Vitamin B Deficiency, Quart. J. Exper. Physiol. **18**: 397 (May) 1928.

[28a] Marrian, G. F., and Parkes, E. S.: Effect of Anterior Pituitary Preparation Administered During Dietary Anoestrus, Proc. Roy. Soc., B. **105**: 248 (Sept. 2) 1929.

[29] Evans, H. M., and Simpson, M. E.: Subnormal Sex-Hormone Content of the Hypophysis of Animals with Inadequate Antineuritic Vitamin B, Anat. Rec. **45**: 216, 1930.

[30] Juhász-Schäffer (footnote 15) has shown that high dosage of E by mouth leads to its presence in the feces.

[31] Evans, H. M., and Burr, G. O.: Development of Paralysis in Suckling Young of Mothers Deprived of Vitamin E, J. Biol. Chem. **76**: 273 (Jan.) 1928.

[32] Evans, H. M.: Relation of Vitamin E to Growth and Vigor, J. Nutrition **1**: 23 (Sept.) 1928.

[33] Evans, H. M., and Kohls, C. L.: Vitamin E and Anemia, Anat. Rec. **38**: 52, 1928.

[34] *Nelson, V. E.; Ohrbeck, Esther; Jones*, R. L., and Taylor, M. W.: Cod Liver Oil for Reproduction, Am. J. Physiol. **85**: 476 (July) 1928.

[35] Sure, Barnett; Kik, M. C., and Walker, Dorothy J.: Effect of Vitamin E. Deficiency on Hematopoietic Function, J. Biol. Chem. **83**: 401 (Aug.) 1929.

DISTRIBUTION OF VITAMIN E IN FOODS

Perhaps the chief surprise encountered in the exploration of animal tissues for the presence of vitamin E relates to a marked difference from vitamin A; that is, its higher concentration in the general body musculature and fat than in such organs as the liver and kidney or in the gonads. And it is also to be emphasized that in neither of these tissues is it present to any concentrated extent—to the extent, for example, at which it is encountered in the seeds of cereals (wheat, corn). In marked contrast with the paucity of E, even in its highest depots in animal tissues, is its concentration in the organs of certain plants, especially in green leaves and seeds. It is abundant in lettuce, spinach, alfalfa and watercress. In the cereals it occurs exclusively in the embryo, not in the endosperm, and always in the fat there present, so that a quantitative extraction may be made by subjecting wheat germ, for example, to percolation with ether. Wheat germ oil has in fact heretofore constituted the highest known source of the vitamin. Most vegetable oils contain it, though not to any concentrated extent. Some controversy has arisen over the possible occurrence of the vitamin in cod liver oil. Its customary absence from this oil confers a boon on vitamin E investigators on account of the well known use of this oil as a high source of vitamin A and D in such nutrition experiments. In fact, had it been present in this oil, the original detection of vitamin E would not have been made; and it is certain that with some samples very high levels of cod liver oil can be fed without fertility occurring (Evans et al.); this view has been concurred in by Hogan and Harshaw,[9] Sure,[36] Mattill and others—yet Nelson,[37] and Simmonds, McCollum and Becker [38] have interpreted certain experiments as pointing to the presence of E in certain samples or brands of the oil of the cod's liver.

VITAMIN E AND NATURALLY OCCURRING ANTIOXYGENS

In 1922, McCollum and his co-workers [39] made the important observation that in the presence of certain salt mixtures (salts 20) ophthalmias developed in their rats whereas in the presence of other salt mixtures (salts 185), such was not the case. They thought that these ophthalmias were due to the high content of sodium or chlorine in the salts.

Later they [40] found that the incorporation of 3 per cent or more of wheat germ in their diets prevented these "salt ophthalmias." Mori,[41] from his histologic studies, concluded that these "salt ophthalmias" and the ophthalmias induced through vitamin A deficiency were the same. From the known facts of the ease with which vitamin A is destroyed by oxidation [42] and the excellence of ferrous sulphate as an oxidative catalyst,[43] it was concluded almost simultaneously by Jones [44] and McCollum and his co-workers [44] that the "salt ophthalmias" were the result of vitamin A inactivation due to the presence of ferrous sulphate.

The peculiarity found in these studies was the protection offered to vitamin A against destruction in the presence of ferrous sulphate by wheat germ oil and unextracted wheat germ.[45] Extracted wheat germ was no longer efficacious as a protective agent. Since wheat germ oil is one of the best sources of vitamin E, it was but natural to postulate that vitamin E was concerned in some unknown manner in protecting vitamin A against destruction.[46]

Mattill [47] made further progress in the elucidation of this problem. He found that diets which induced sterility were very susceptible to oxidation and that wheat germ oil offered a large measure of protection against such oxidation. He acted on the suggestion of Holm and his co-workers,[48] that certain compounds, present in oils and possessing hydroxy groups, are active in protecting fats against rancidity or oxidative changes. He found a correlation between the acetyl number of fats and the ease with which they are oxidized. From a consideration of his data he was able to postulate the existence of a balance between unsaturated fatty acids and the protective substances or antioxygens.[49] Wheat germ oil has a high acetyl value and therefore presumably is rich in antioxygens, and it is to this that it owes its stabilizing activity on vitamins A and E. In effect, so easily is vitamin E destroyed by slight changes in rancidity of the fats in which it is carried in solution that any analysis of vitamin E without simultaneous analysis for antioxygenic activity renders vitamin E analyses worthless.

The information on sensitivity of vitamins A and E to oxidative changes in the fats containing them has enabled Mattill [50] to explain some of the earlier results

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obtained in his laboratory. Sterility was obtained on milk and other diets carrying lard, but when the lard was removed there was invariably an increase in the fertility of the rats. The ease with which lard undergoes rancidity explained the instability of vitamin E in lard-containing diets. In this connection must be mentioned earlier observations made by Fridericia [51] on inactivation of vitamin A by hardened whale oil and lard, most likely through rancidity changes in the fats.

Supplee and Dow [52] report the interesting finding that whole milk powder, stored for two years in hermetically sealed cans, has been rendered unfit for reproduction in rats. Even in the presence of carbon dioxide, there is no marked improvement. Only when the air is deoxygenated will the milk powder render reproduction possible.

The extensive investigations of Nelson and his co-workers [53] on reproduction indicate that they too have been involved in this problem; i. e., the instability of vitamin E in fats undergoing oxidative or rancidity changes. Undoubtedly their diets carried sufficient vitamin E so that when this was added to the initial stores possessed by the rat, considerable reproduction could take place. When cod liver oil was mixed in the diets and allowed the development of rancidity changes,[8] the diet was rendered inferior for reproduction. It is also significant that lard-containing diets [54] failed to give reproduction. It is of especial significance that the Squibb cod liver oil which they assert gives the best reproductive performance [33] is also least prone to oxidative change.[55]

A special study of the destructive action of certain fats on vitamin E was reported by Evans and Burr,[56] from whose work it would appear that vitamin E is extraordinarily sensitive to even slight rancidity changes in fats. This is indeed the more remarkable since vitamin E will withstand drastic oxidation by a stream of air at 97 C. for twelve hours, resulting in extensive oxidative changes as shown by the darkening of the oil and the development of rancidity. There is no doubt, however, about the ability of slight rancid changes in lard to destroy readily any vitamin E mixed with it. In fact, as has already been indicated, this remarkable phenomenon has been the basis of the most successful sterility-producing diets.

Such being the case, it was a matter of some surprise when there appeared from McCollum's laboratory [38] a report indicating that certain lards not only did not inactivate vitamin E but even apparently contained it. It seems clear that not all lards behave alike in their destructive action on vitamin E. By using the Evans and Burr technic,[57] the presence of 22 per cent lard in a diet may be and usually is sufficient to inactivate the vitamin E in wheat germ even when the latter is present in the diet to the extent of 2 per cent. A surprising exception was, however, encountered by Evans and Lepkovsky, who secured two samples of lard [58] which failed to destroy the E in wheat germ even when mixed and allowed to stand at laboratory temperatures for three months. Many repetitions have convinced them of the validity of these particular results, but though they have repeatedly attempted to obtain other E-preserving lards they have not met with success.

The logical explanation here would seem surely to be that certain lards contain antioxygens, thereby preventing oxidative changes and conserving any vitamin E which may happen to be in the diet. Moreover, the very existence of the antioxygens in certain lards renders it not impossible that they also contain some vitamin E. There are no *a priori* reasons why lard should not originally contain more or less E. Since the vitamin is present in animal fats, it is also certain that the E could not be recognized unless antioxygens—usually absent from lards—are also present.

Recently, Cummings and Mattill [59] have studied simultaneously the vitamin E and the antioxygen of various fats and found a good correlation between the susceptibility of fats to oxidation and their content in E. They have also discussed the possible rôle of E itself as an antioxygen.

An interesting observation from Steenbock's laboratory [60] should be considered here. When 1 per cent ferric chloride in ether solution was added to stock diets, complete sterility resulted. The ferric chloride was mixed in the ration once a week, so that extensive rancidity changes could hardly take place. Yet the ration had a slight acrid odor, indicating that obscure changes had occurred. It illustrates in a rather spectacular manner the lability of vitamin E to these slight and obscure changes.

The dependence of vitamin E for its preservation on the presence of an antioxygen results in the close association of E and antioxygen. Thus, like vitamin E, the antioxygen is found in the unsaponifiable portion of the fat.[61] Like vitamin E, it is not precipitable by digitonin.[61] Olcott and Mattill [62] have fractionated the unsaponifiable lipids of lettuce and found that vitamin E and the antioxygen of lettuce cannot be separated by successive fractionation with ether, acetone, petroleum benzin and methyl alcohol, although they finally separated them by distribution between petroleum benzin and 92 per cent alcohol, vitamin E remaining in the petroleum benzin, and the antioxygen going into the 92 per cent methyl alcohol.

THE CHEMISTRY OF VITAMIN E

Much of the work on the chemical nature of vitamin E was done by Evans and Burr, which was summarized in a monograph.[63] Some of the properties of the vitamin may be briefly reviewed here.

Vitamin E is stable to high temperatures in the dry condition (up to 250 C.). Aeration at 97 C. for twelve hours does not destroy it. It is stable to ordinary light, but prolonged ultraviolet irradiation slowly inactivates it. Such stability to light and oxidation should be compared with the sensitiveness of vitamin E toward such obscure oxidative changes as occur in the "rancidity" of fats, for it must be remembered that aeration at high temperatures, by itself apparently not very destructive to vitamin E, will greatly accelerate rancidity in fats, which are so destructive to E.

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[51] Fridericia, L. S.: Inactivating Action of Some Fats on Vitamin A in Other Fats, J. Biol. Chem. **62**: 471 (Dec.) 1924.

[52] Supplee, G. C., and Dow, O. D.: Reproductive Potency of Dry Milk as Affected by Oxidation, J. Biol. Chem. **63**: 103 (Feb.) 1925.

[53] Nelson, V. E.; Heller, V. G., and Fulmer, E. I.: Studies on Yeast: VII. The Dietary Properties of Yeast, J. Biol. Chem. **57**: 415 (Sept.) 1923. Anderegg, L. T., and Nelson, V. E.: Milk Powders as Food: II. Observations on the Existence of Vitamin E, Indust. & Engin. Chem. **18**: 620 (June) 1926. Nelson, Jones, Adams and Anderegg (footnote 8). Nelson, Ohrbeck, Jones and Taylor (footnote 33).

[54] Nelson, Heller and Fulmer (footnote 53).

[55] Private communication by H. A. Mattill, University of Iowa, Iowa City.

[56] Evans, H. M., and Burr, G. O.: Vitamin E: The Ineffectiveness of Curative Dosage When Mixed with Diets Containing High Proportions of Certain Fats, J. A. M. A. **88**: 1462 (May 7) 1927; The Destructive Effect of Certain Fats and Fractions Thereof on the Anti-Sterility Vitamin in Wheat Germ and in Wheat Germ Oil, ibid. **89**: 1587 (Nov. 5) 1927; The Antisterility Vitamin Fat-Soluble E, Memoirs of the University of California **8**: 116 (Aug.) 1927.

[57] Evans and Burr (footnote 56, first reference).

[58] *Obtained through the courtesy of Dr. J. J. Vollertson of Armour* and Company.

[59] Cummings, M. J., and Mattill, H. A.: The Auto-Oxidation of Fats with Reference to Their Destructive Effect on Vitamin E, J. Nutrition **3**: 421 (Jan.) 1931.

[60] Waddell, J., and Steenbock, Harry: The Destruction of Vitamin E in a Ration Composed of Natural and Varied Foodstuffs, J. Biol. Chem. **80**: 431 (Dec.) 1928.

[61] Mattill and Crawford (footnote 49).

[62] Olcott, H. S., and Mattill, H. A.: The Unsaponifiable Lipids of Lettuce: II. Fractionation, J. Biol. Chem. **93**: 59 (Sept.) 1931.

[63] Evans and Burr (footnote 56, third reference).

The vitamin is often stable to saponification in the cold, at 35 C., or in boiling alcohol. However, in some cases as much as 75 per cent of the E may be destroyed during the saponification. Such destruction may be avoided by using methyl alcohol or by adding an antioxygen such as dibenzylamine. Although neither saponification nor hydrogenation destroys vitamin E, the saponification of hydrogenated wheat germ oil results in loss of activity.

After saponification, vitamin E is found in the "nonsaponifiable matter," thus resembling vitamins A and D.

Hydrogenation does not destroy the activity of vitamin E, but bromination in glacial acetic acid does. Acetylation with acetic anhydride also destroys vitamin E, but dry hydrochloric acid in absolute alcohol has no deleterious effects.

Cooking or drying, or steam distillation is without harmful effect. Unlike A, vitamin E is not volatile in steam at 100 C.; at 180 C. and at 50 mm. pressure, however, E is quite volatile in steam. This may be compared with D, which is destroyed by steam distillation. Attempts to purify E by vacuum distillation result in considerable decomposition. The nonsaponifiable matter of wheat germ oil (original oil active in a single 500 mg. dose) will cure sterility of a female rat in a single 25 mg. dose. This material is mostly sitosterol, which is largely removed by crystallization from pentane and methyl alcohol solution. Partition between pentane and 92 per cent methyl alcohol still further concentrates vitamin E, and digitonin is used to remove the last of the sitosterol. Doses active in from 5 to 10 mg. are thus obtained. Further attempts to purify the material by distillation do not result in any great concentration of the active material.

A fractionating column, devised by Robert Cornish, using distribution between iso-octane (2-2-4 trimethyl pentane) and methyl alcohol has in his hands permitted further purification and also measurement of actual distribution ratios of the fat soluble vitamins without actually having any of them even approximately pure. Vitamin E is shown to be either a single substance or a mixture of substances of nearly the same distribution ratio. (A similar statement could be made regarding vitamin A or D.) The order of distribution ratios seems to be essentially the same in different solvents or at different temperatures, only the absolute values being affected. This order is, starting from the most fat-soluble, carotene, sitosterol, vitamin E and cholesterol (these two being nearly identical), vitamin D, ergosterol, linoleic acid, anthracene, anthraquinone, vitamin A, dibenzylamine, diphenylamine, quinone, hydroquinone, pyrogallol. As an illustration, it has been possible for Cornish in this way to secure the actual distribution ratios of the three fat-soluble vitamins as given in the accompanying table.

Distribution Ratios of Fat-Soluble Vitamins

Solvents	Temperature	Vitamin A.	Vitamin D.	Vitamin E.
C_5H_{12}-CH_3OH......	0 C.	0.43	....	0.88
C_5H_{12}-CH_3OH......	—20 C.	0.35	....	....
C_6H_{14}-CH_3OH......	—20 C.	0.31	1.25	1.48
C_8H_{18}-CH_3CN......	0 C.	0.25	3.7	5.0
C_8H_{15}-CH_3OH......	0 C.	0.35	0.9	....

The hydrocarbons in the accompanying table are normal except octane, which is 2-2-4 trimethyl pentane. The figures for the ratios represent the concentration in the hydrocarbon layer divided by the concentration in the methyl alcohol layer, the same volume units being used in each case.

SPECULATION AS TO HOW VITAMIN E INTERVENES IN PHYSIOLOGIC PROCESSES

The secret underlying the vital need for vitamin E on the part of certain tissues (e. g., the testicular epithelium and the developing embryo) has not been penetrated as yet. It is especially interesting that the male germ cells exhibit this need but that the female germ cells do not. Since, however, the former cells are in infinitely more active and continuous mitosis, this difference might be looked on as due solely to the rate of tissue growth and the strange linkage of need by the developing fetus and by the testis thus explained. The male germ cells are, however, hardly produced at rates exceeding that involved in blood cell formation and we noted no disturbance in hematopoiesis when E was absent; furthermore, the remarkably rapid and entirely normal growth of the entire body that takes place when young animals are weaned and put on E-free diets would indicate that only during a "critical" time in fetal life are the tissues dependent on the vitamin.

Verzár, impressed with the relation of the hypophysis to the genital system, has recently urged the view that lack of E works its mal-effects by injury to the hypophysis; but, since the parenteral administration of fresh hypophyseal substance will not cure E-free gestations, his position seems hardly tenable.[63a]

NEED FOR VITAMIN E IN MAN AND OTHER ANIMALS

Indubitable as are the results which have been obtained by the careful study of small rodents (rats, mice), one cannot say that equally conclusive proof of the need for E on the part of other animal forms has as yet been furnished. Bartolini[64] believes that E is required by the rabbit, and Card[65] that it is required by the bird (poultry); it will be important for these researches to gain confirmation. The same must be said about indications of its importance in the reproduction of cattle, which Graves,[66] Vogt-Möller and others believe they have secured, and to an even greater extent of Poulsson[67] and Vogt-Möller's[68] few cases of habitual abortion in women, "cured" by the ingestion of E during pregnancy.

It may well be that other animal forms can actually synthesize the vitamin (if they need it at all) just as the rat does antiscorbutic C, yet until this has been demonstrated it is a preferable belief that the clearly expressed biochemical need for the substance E seen in the rat has some counterpart in the chemical mechanism of other animals.

[63a] It is also to be noted that hypophyseal injury affects ovary and testis alike — a fundamental distinction from the condition due to inadequate E.

[64] Bartolini, S.: La vitamina de la secundacion, Rev. Patol. Sper. **4**, 1929; Rec. Sudamericana Endocrinol. Immunol. quimoterop. **13**: 440, 1930.

[65] Card, L. E.: Vitamin E Requirements of Poultry, Poultry Sc. **8**: 328, 1929.

[66] Graves, R. R.: Personal communication to the author.

[67] Poulsson, E.: Bemerkungen über fettlösliche Vitamine und Sterilität (habituellen Abort), München. med. Wchnschr. **74**: 674 (April 22) 1927.

[68] Vogt-Möller, P.: Treatment of Habitual Abortion with Wheat Germ Oil, Lancet **2**: 182 (July 25) 1931. Vogt-Möller, P., and Bay, F.: Treatment of Sterility in Cows with Wheat Germ Oil, Vet. J. **87**: 165, 1931.

Committee on Foods

The following products have been accepted by the Committee on Foods of the American Medical Association following any necessary corrections of the labels and advertising to conform to the Rules and Regulations. These products are approved for advertising in the publications of the American Medical Association, and for general promulgation to the public. They will be included in the Book of Accepted Foods to be published by the American Medical Association.

Raymond Hertwig, Secretary.

CELLU GELATIN DESSERT. ASSORTED FLAVORS. UNSWEETENED

(Gelatin, Artificial Flavoring, Certified Color, Fruit Acid, Salt)

Manufacturer.—The Chicago Dietetic Supply House, Inc., Chicago.

Description.—Unsweetened, flavored and colored granular gelatin mixed with tartaric acid and a small quantity of salt. The color is certified by the U. S. Department of Agriculture. The flavors of the respective products are terpeneless oils of orange and lemon; and true fruit extracts of raspberry, cherry and grape fortified with imitation flavors of aldehydes and esters.

Manufacture.—The liquid flavoring, small quantities at a time, is added to the gelatin. The mix is sifted and dried at room temperature. The process is repeated until the required amount of flavoring has been added. Dry tartaric acid, the artificial color and salt are added; the mix is ground, sifted and measured into envelops (4 Gm. to each envelop).

Analysis (submitted by manufacturer).—

(analysis of raspberry flavored sample)

	per cent
Moisture	8.8
Ash	1.4
Sodium chloride	0.8
Fat	0.4
Protein (N × 5.55)	71.6
Reducing sugars as dextrose (J. Biol. Chem. **69**: 703; Folin-Wu method for blood sugar)	2.8
Other carbohydrates (microchemical method)	0.0
Tartaric acid	15.0

(analysis of orange flavored sample)

	per cent
Moisture	9.0
Ash	1.4
Sodium chloride	1.0
Fat	0.2
Protein (N × 5.55)	78.0
Reducing sugars as dextrose (same as noted above)	0.0
Other carbohydrates (microchemical method)	0.0
Tartaric acid	10.4

Calorics.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—These dessert powders are especially intended for the preparation of pleasantly flavored and colored "carbohydrate free" gelatin desserts. The amount and kind of sweetening allowed in the individual diet must be added.

COMET BROWN RICE

Manufacturer.—Comet Rice Company, New York.

Description.—A packaged whole grain rice; contains the bran and germ.

Manufacture.—Rice in the hulls from the fields is cleaned of foreign material, such as dirt and other seeds. The hulls are removed by the usual hulling operations of rice mills. The rice groat free from hulls is further mechanically freed from extraneous materials without removal of the rice bran layer, is heated to destroy insect life, and is automatically packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	11.0
Ash	1.2
Fat (ether extract)	2.7
Protein (N × 5.95)	7.3
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	76.9

Calorics.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—A whole brown rice for all table uses of rice.

AIRY FAIRY KWIK-BIS-KIT

Self-Rising Flour; Flour, Vegetable Shortening, Phosphate, Sugar, Dry Skim Milk, Salt, Soda

Manufacturer.—Commander-Larabee Cereal Company (subsidiary of the Commander-Larabee Corporation, Minneapolis, Minn.).

Description.—A self-rising flour containing vegetable shortening, acid phosphates, sucrose, baking soda, powdered skim milk and salt; especially prepared for biscuits.

Manufacture.—The flour, salt, sugar, skim milk powder, baking soda and phosphates are thoroughly mixed in a batch mixer. The shortening is then incorporated by thorough mixing. The product is packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	9.5–10.5
Ash	4.6– 4.7
Salt (NaCl)	2.3– 2.5
Fat (ether extract)	13.8–15.0
Protein (N × 6.25)	7.5– 8.0
Sucrose	1.8– 2.2
Crude fiber	0.1– 0.2
Carbohydrates other than crude fiber (by difference)	64.5–61.6

Calorics.—4.1 per gram; 116 per ounce.

Claims of Manufacturer.—A self-rising flour containing shortening already worked in and requiring only admixture with water or milk for the preparation of biscuits.

TAR HEEL BREAD

Manufacturer.—Waldensian Baking Company, Valdese, N. C.

Description.—A white bread made by the sponge dough method (method described in The Journal, March 5, 1932, p. 817); prepared from patent flour, water, yeast, salt, sucrose, shortening, sweetened condensed skim milk and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	37.5
Ash	0.8
Fat	0.7
Protein (N × 6.25)	8.4
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	52.3

Calorics.—2.5 per gram; 71 per ounce.

VB (VISSCHER BROTHERS) OLD FASHIONED APPLE SAUCE

Manufacturer.—Lyndonville Canning Company, Inc., Lyndonville, N. Y.

Description.—Canned apple sauce prepared from peeled and cored apples with added sucrose.

Manufacture.—Western New York apples of several varieties are carefully washed on roller conveyers by water sprays and are peeled and cored by machine. All blemishes and defects are cut out on trimming tables. The apples are emptied into a tank of salt water to prevent discoloration. After the salt bath they are again inspected on a roller conveyer, washed by water sprays, sliced by machine and cooked in an "apple sauce cooker" with the addition of water and sugar. The cooked apples are pulped, and seeds and harsh fibrous parts are removed. The apple sauce is automatically filled into cans or jars, which are sealed, processed under pressure and immediately cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	75.0
Ash	0.2
Salt (NaCl)	0.01
Fat (ether extract)	0.1
Protein (N × 6.25)	0.2
Reducing sugars, as invert	9.5
Sucrose (copper reduction method)	12.0
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference)	23.6
Titratable acidity as malic acid	0.4

Calorics.—1.0 per gram; 28 per ounce.

Claims of Manufacturer.—A slightly sweetened apple sauce for table use.

PILLSBURY'S BEST XXXX FLOUR (BLEACHED)

Manufacturer.—Pillsbury Flour Mills Company, Minneapolis.

Description.—An "all purpose" patent flour prepared from a variety of wheats.

Manufacture.—Selected varieties of wheats are cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL (June 28, 1932, p. 2210). Chosen flour streams are blended, bleached with 2.5 Gm. of nitrogen trichloride per barrel and 1 pound of a mixture of benzoyl peroxide and calcium phosphate to 40 barrels of flour and automatically packed in bags.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.5
Ash	0.4
Fat (ether extraction method)	1.1
Protein (N × 5.7)	11.0
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	73.8

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—An "all purpose" patent flour.

H. G. F. BRAND GOLDEN SYRUP

(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—H. D. Lee Mercantile Company, Kansas City, Mo.

Description.—A table syrup; a corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calories, Claims of Manufacturer.—See these sections for Banner Blue Corn Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

SQUIBB VITAVOSE

(Malted Wheat Germ Extract)

Manufacturer.—E. R. Squibb and Sons, New Brunswick, N. J.

Description.—A powdered extract of malted wheat germ and U. S. P. malt; essentially maltose, dextrins and "starch intermediate products"; contains vitamins B and G in substantial quantities; packed in tins.

Manufacture.—Wheat germ is cooked with a small amount of malt, the temperature is reduced by addition of water, additional malt is added, and the malting process is continued under definite conditions to convert the starch to dextrins, maltose and "intermediate products." The mixture is allowed to settle, and the supernatant liquid containing sugars and other soluble materials is drawn off, filtered and concentrated under conditions that protect the vitamin content. The mash is washed with water to remove adhering soluble materials. The wash water is filtered and added to the material already in the evaporator, which is concentrated to a syrup. The syrup is dried and the resulting solids are ground, sifted and automatically packed in tin cans.

The conditions of the entire process are designed to assure maximum extraction of water soluble substances from the malted wheat germ and malt and to protect vitamin B.

Analysis (submitted by manufacturer).—

	per cent
Moisture	3.
Ash	4.
Fat	0.
[illegible]	8.
[illegible] (amino N × 6.25)	7.
Reducing sugars as maltose	42.
Maltodextrins (total carbohydrates minus reducing sugars and dextrins)	25.
Dextrins (methyl alcohol precipitation method)*	18.
Crude fiber	0.0
Total carbohydrates (by difference)	78.
Iron (Fe)	0.013
Copper (Cu)	0.003
Manganese (Mn)	0.002

* Leach, Food Inspection and Analysis, ed. 4, page 654.

Calories.—3.7 per gram; 105 per ounce.

Vitamins.—Vitamin assay shows a content of vitamins B and G at least equal to 100 times and 30 times, respectively, that of equal weights of fresh raw whole milk.

Claims of Manufacturer.—Intended especially for the carbohydrate, food iron, and vitamins B and G supplement of milk for infants or malnourished adults and children, expectant and nursing mothers, invalids and convalescents.

DEAN'S QUALITY EVAPORATED MILK

Manufacturer.—Dean Milk Company, Chicago.

Description.—An unsweetened, sterilized evaporated milk.

Manufacture.—The milk is collected, examined and evaporated in accordance with the usual methods and procedure described for evaporated milk (THE JOURNAL, April 16, 1932, p. 1367).

Analysis (submitted by manufacturer).—

	per cent
Moisture	73.9
Total solids	26.1
Ash	1.5
Fat (ether extract)	7.8
Protein (N × 6.38)	7.1
Lactose (by difference)	9.7

Calories.—1.4 per gram; 40 per ounce.

Claims of Manufacturer.—This brand of evaporated milk is for general cooking, baking and table uses and infant feeding. The mixture of equal parts of the evaporated milk and water is not below the legal standard for whole milk. The curds formed in the stomach are smaller, softer and more readily digestible than those from raw or pasteurized milk.

KRE-MEL DESSERT (CHOCOLATE FLAVOR)

A Mixture of Sugar (Dextrose and Sucrose), Corn Starch, Cocoa, Vanillin

Manufacturer.—Corn Products Refining Company, New York.

Description.—Mixture of dextrose, corn starch, sucrose, cocoa; flavored with vanillin.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	1.5
Fat (ether extract)	1.4
Protein (N × 6.25)	3.1
*Dextrose	37.0
*Sucrose	23.0
*Starch	27.0
Crude fiber	0.0
Titratable acidity as HCl	0.05
Vanillin flavor	present

* Estimated from formula.

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—A dessert powder for the simple preparation of table desserts.

FOODTOWN RICE POPS

(Flavored with Malt, Sugar and Salt)

Manufacturer.—Foodtown Kitchens, Incorporated, Chicago.

Description.—Popped and toasted rice flakes made from cooked whole rice flakes flavored with malt extract, sugar and salt.

Manufacture.—Natural brown rice containing all the bran is cooked under steam pressure with a solution of malt extract, salt and sugar. The cooked rice is flaked, dried in a current of hot air to a definite moisture content and toasted in a revolving drum oven at a temperature which explodes the starch cells and puffs the flakes. The flakes pop as does popcorn. The broken flakes are screened out and the rice "pops" are automatically packed in paraffin paper liners in paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	3.7
Ash	3.3
Chlorides as sodium chloride	2.6
Fat (ether extract)	1.3
Protein (N × 6.25)	6.7
Crude fiber	0.9
Reducing sugars as dextrose	0.8
Sucrose (acid inversion and copper reduction)	8.2
Carbohydrates other than crude fiber (by difference)	84.1

Calories.—3.8 per gram; 108 per ounce.

Claims of Manufacturer.—Ready to eat "popped," cooked and toasted whole rice flakes.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 6, 1932

LUNG CANCER IN MINERS

One of the most frequently cited instances of occupational cancer is the lung cancer of the Schneeberg miners. Indeed, the prominence that has been given to this group of cases has seemed out of proportion to the extent of the malady and the information it has given concerning the pathogenesis of cancer. Like many another medical item, it apparently got into the center of the current of medical literature and has not slipped off in the by-passes and eddies of neglect. For a long time primary cancer of the lung was listed as among the rare diseases, so this heaping up of cases of a rare tumor excited interest as a remarkable phenomenon. Now that bronchogenic carcinoma has become one of the common forms of cancer both in the clinic and in the necropsy room, the old story of the Schneeberg lung cancers is pulled into the light with almost every mention of this disease, with the hope that it may help to solve the mystery of the apparently startling increase of pulmonary cancer during the past few years. It is of interest to recall that the prevalence of fatal disease of the lung among these miners in the Saxon mines of the Erz Mountains was mentioned in 1500 by Agricola, although its cancerous nature was not established until 1879.

A new chapter in this story now appears with the report by Pirchan and Šikl[1] on the occurrence of the same disease in the famed mines of Joachimstal, the source of the pitchblende from which the first supplies of radium were obtained for use in therapeutics, and which still produce about 2 Gm. of radium chloride a year despite the competition of the larger radium deposits of Africa and other countries. These mines are on the Bohemian side of the Erz Mountains, only twenty miles from the mines of Schneeberg, and it is a strange story of mental resistance that the physicians of Joachimstal seemed not to realize that the high mortality from pulmonary disease among their miners was probably related to the condition killing their neighbors on the other side of the mountains. The report of Pirchan and Šikl leaves the suspicion that mining and public health officials may have possessed a certain lack of desire to have such a possibility made prominent—there are rumors that such things have happened elsewhere. At last, however, an investigation has been made with the assistance of the Health Organization of the League of Nations, and postmortem examinations were made on the bodies of thirteen Joachimstal miners who died during 1929-1930, revealing that no less than nine of these had primary carcinoma of the lung. Furthermore, in the year following this period of postmortem study twelve miners have died, in nine of whom the clinical diagnosis was pulmonary cancer. The authors state that "since the beginning of that year it has been impossible, for reasons we need not state here, to perform any necropsies of diseased miners."

One striking feature of this report is the late occurrence of the disease. Thus, six of the nine men had been pensioned off several years (from six to twenty-seven years) before dying of lung cancer. Also, though a systematic examination of three hundred and twenty-three mine workers revealed no cases of this disease, in three of eighty-three pensioned miners a probable diagnosis of lung cancer could be made. This observation is in harmony with that made in many other types of cancer, that the development of a malignant condition is a matter of several years after the inciting agent begins to act. For example, the bladder cancer of dye workers also first makes its appearance ten or fifteen years after the exposure, often there having been an interval of ten or more years after cessation of work with the dyes. As pointed out by Murray,[2] the period of several weeks to months that elapses before cancer develops in mice painted with tar corresponds to just about the same fraction of the entire life cycle of these animals that the seven to fifteen years latent period usually observed with industrial cancers constitutes in the human life span. These facts suggest that cancer of the stomach, breast or uterus occurring in a woman at the age of 45 owes its origin to a slow continued process which began ten, fifteen or even more years before, and not usually to some event immediately preceding the first visible appearance of the new growth.

As yet it is no more clear why pulmonary cancer occurs with such astounding frequency in these two small groups of miners than it is established why through most of the world it seems to have changed from one of the rare forms of cancer to one of the commonest forms, according to the experience of many pathologists. Apparently workers in other mines do not suffer in this way, although with many types of mining there is fully as much or more pulmonary damage leading to fibrosis, bronchiectasis and phthisis. It has been suggested that inhalation of arsenic dust might account for the Schneeberg cancer, but miners elsewhere working with ores containing arsenic and cobalt have not been reported as presenting a similar high incidence of cancer. Naturally in these days the fact that, in both the Schneeberg and the Joachimstal mines, large radium deposits exist, and that the air contains much radium emanation, up to 50 mache units, arouses the suspicion that herein lies the inciting agent of the lung cancers. The miners themselves state that discovery of a vein rich in uranium is always followed some years later by a strongly increased mortality among them, but analysis of a part of a cancerous lung from one of the miners revealed no radioactivity, and for that matter there was no arsenic, cobalt or uranium. The miners in other parts of the world who have been working with radioactive ores should now be studied thoroughly to determine whether they have been jeopardized by their occupation, as suggested by the Schneeberg-Joachimstal experience, so that, if such a danger exists, steps may be taken to guard against it.

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[1] Pirchan, A., and Šikl, H.: Cancer of the Lung in the Miners of Jáchymov (Joachimstal), Am. J. Cancer **16**: 681 (July) 1932.

[2] An Explanation for the Influence of Age on the Occurrence of Cancer, editorial, J. A. M. A. **94**: 870 (March 22) 1930.

VIRUSES

A considerable group of maladies is at present classed under the designation of virus diseases. Smallpox, vaccinia, yellow fever, rabies, poliomyelitis, herpes simplex, foot-and-mouth disease, fowl pox, fowl plague, canine distemper, and psittacosis are included. Although the exact nature of the pathogenic factors involved remains unknown, the large group of virus diseases is "loosely hung together mainly by the thread of filterability of the active agents which cause them." In his Harvey Lecture in 1929, Goodpasture[1] remarked that it seems almost hopelessly confusing to one newly introduced to the subject of filtrable viruses to find such a formidable array of apparently unrelated or at most seemingly superficially related morbid entities grouped together nominally only on the basis of the fact that their active agents can, in some cases with ease and in others with great difficulty, be forced through the small pores of so-called antibacterial filters of various kinds. What possible congenial relationship might the virus of smallpox, for example, bear with that of the wilt of caterpillars or the transmissible lysis of bacteria?

It has become apparent to investigators of virus problems that they are dealing with entities quite different from those represented by bacteria, fungi, spirochetes and protozoa. Skepticism has arisen as to whether the agent of any virus disease is actually a "living" something. The phantasy of writers has wandered through mazes of unwarranted speculations. The suggestion has been made that there may be a spontaneous generation of viruses. Abandoning the welter of uncertainties, Rivers[2] of the Rockefeller Institute for Medical Research has attempted to answer some of the skeptics. In his presidential address before the American Society for Clinical Investigation last May he pointed out that, although the exact nature of the etiologic agents is unknown, it is somewhat of an exaggeration to say that the agents themselves are unknown. The viruses of the familiar virus diseases can be separated one from another and from ordinary bacteria. Furthermore, in many instances their presence in a variety of materials can be ascertained with much more ease and assurance than is the case with certain bacteria.

It is too early to accept any of the hypotheses as to the origin of the viruses. There has been some recognition of the circumstance that many of the filtrable agents seem to bear a peculiar relationship to cells in the production of lesions in the host, and their manner of action appears to be different from that of known micro-organisms. Nevertheless some students have ventured to derive the viruses from bacteria, taking account of the so-called mutations of certain micro-organisms. For a long time, Rivers remarks, a few investigators have held that certain virus diseases are induced by ordinary bacteria. Now that attention is being focused on filtrable forms of bacteria, workers in increasing number are adopting the belief that viruses are merely filtrable, invisible and noncultivable elements of ordinary bacteria. Without going into details of the available knowledge of bacterial life cycles and their invisible and noncultivable forms, one can say that proof of many of the statements regarding them is lacking. Since even the existence of bacterial life cycles is doubtful, Rivers adds, it seems unwarrantable to offer presumptive filtrable forms of them as the explanation of another unsolved problem, the nature of the viruses.

Many readers will be surprised to learn that the viruses may be situated near the line that separates inanimate transmissible incitants from minute living organisms. The transition from one side of the line to the other may be so gradual that no great difference in the types of disease caused by agents near the line is perceptible. Such a statement, says Rivers, is strongly reminiscent of a remark by Aristotle that "nature makes so gradual a transition from the inanimate to the animate kingdom that the boundary lines which separate them are indistinct and doubtful." Rivers pointed out that, for more than thirty years, investigators in considerable number have waited for the veil of mystery that surrounds the viruses to be lifted by deft hands capable of cultivating these agents on lifeless mediums. If the viruses are minute obligate parasites incapable of multiplication in the absence of living susceptible host cells, or if they are products of cellular perversion reproducible in series, it would be a waste of time to wait for this to eventuate. Fortunately, Rivers concludes, a number of workers are already attempting by other means the study of the virus diseases and their etiologic agents. That a certain amount of success may attend these methods is proved by the results of recent work on vaccinia, psittacosis, canine distemper, poliomyelitis and yellow fever.

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[1] Goodpasture, E. W.: Etiological Problems in the Study of Filterable Virus Diseases, Harvey Lectures, 1929-1930, **25**:77, 1931.

[2] Rivers, T. M.: Viruses, Science **75**:654 (June 24) 1932.

CHEMISTRY OF INSULIN

The story of the discovery of insulin is too well known to need repetition. The ready availability of the hormone has permitted a radical change in the mode of treatment of diabetes and as a consequence insulin has assumed an important place in therapeutics. These circumstances have stimulated the efforts of organic chemists to learn more about its structure with the ultimate hope that man's need may be safeguarded through the ability to synthesize it. A significant step in advance was made by Abel in 1926 when he succeeded in crystallizing insulin. Subsequently it was shown that this crystalline material exhibits the maximum physiologic activity so far obtained in any preparation. Furthermore, neither the mode of preparation nor the origin of the crude material from which the crystals are made seem to alter the potency of the final product. Thus, it appears that the crystalline material possesses the characteristics of a pure compound. It has subsequently been subjected to vigorous chemical investigation, the results of which have recently been summarized by Jensen.[1]

Crystalline insulin is a protein and shows the high sulphur content of 3.2 per cent that appears to be present in the disulphide linkage. Jensen and his co-workers have carried out new hydrolyses in order to determine more accurately the amino-acids that constitute the insulin molecule and their relative quantities. The available evidence to date indicates that there is more than 10 per cent each of cystine, tyrosine, glutamic acid and leucine and that histidine, arginine and lysine are present in smaller amounts. The presence of hydroxyvaline and proline is doubtful. Is the physiologic action of insulin linked with a so-called prosthetic group attached to the protein or does it arise from certain intramolecular amino-acid groups? Thus far the activity has not been attributed to a "foreign" chemical grouping associated with the protein.

One of the devices employed by the organic chemist to determine active groups is to combine them with known reagents and thus render them inoperative; then by suitable treatment the original grouping can frequently be restored. Acetic anhydride, aldehydes and acid alcohol used as "blocking" agents, as do even the mildest reducing agents, inactivate the insulin; in some instances the activity does not return when the reagent is subsequently removed. It appears, therefore, that the integrity of the chemical groups with which the foregoing reagents combine is essential to the physiologic action of insulin. If such active groups could be split off and the amino-acid thus affected could be determined, important information of the constitution of the effective part of the insulin molecule would be available. This has been done with hydrochloric acid at 100 C. and also with alkali. The first procedure results in an inactive coagulum, which, however, is dissolved by alkali to give an active but noncrystallizable product. When crystalline insulin is treated with alkali, both sulphur and ammonia are split off. A careful consideration of the details of the foregoing reactions has led the Johns Hopkins investigators to assume that the characteristic part of the complex insulin molecule consists partially or entirely of cystine combined directly with glutamic acid, this grouping in further combination with the rest of the molecule. Although it is emphasized that additional evidence is required to establish the validity of these assumptions, one who is familiar with the difficulties of this type of research recognizes a significant advance in the attempt to determine the chemical constitution of insulin. The successful culmination of this effort will be a worthy accompaniment to the success already achieved in other directions in connection with insulin.

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[1] Jensen, H.: Science **75**: 614 (June 10) 1932.

Current Comment

MALIGNANT DIPHTHERIA

Within the last two years, highly malignant diphtheria has appeared in several European cities.[1] In one Düsseldorf hospital, the diphtheria mortality rose to 50 per cent in spite of enormous doses (e. g., 140,000 units) of diphtheria antitoxin. Numerous theories have been proposed to account for this new malignancy, the most obvious being the assumption that a new toxin specificity has been evolved. If so, a polyvalent diphtheria antitoxin should give renewed clinical victory. Current studies of relative toxin specificity, however, do not yield evidence to support this theory. Aoki[2] of the bacteriologic institute at Senai, Japan, has studied the "dissociation" of B. diphtheriae under test tube conditions. While he was able to produce at will several distinct agglutinogenic "mutants" of each pure diphtheria strain thus far studied, he found that all the test tube "variants" were qualitatively identical in toxin production. An antitoxin produced by immunizing animals against any one of the toxins neutralized completely all toxins thus far tested. A similar apparent stability of toxin was demonstrated with twelve test tube "dissociates" of the Perez bacillus. Few toxin studies have thus far been made with cultures isolated from the new "diphtheria gravis." Dr. Hans Lindemann[3] of the Children's Clinic, Düsseldorf, has grown several "gravis" strains in synthetic mediums, with parallel cultures of usual strains. He was able to demonstrate no qualitative or quantitative differences in the toxins of the two clinically distinct types of diphtheria organisms. Both were neutralized perfectly by ordinary diphtheria antitoxin. Unless it can be assumed that artificial culture conditions and animal tests are too crude to reveal differences of specificity in natural infections, factors other than "toxin mutation" must be considered as the probable cause of the excess mortality.

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[1] Diphtheria Gravis, editorial, J. A. M. A. **99**: 227 (July 16) 1932.

[2] Aoki, K.: Ztschr. f. Immunitätsforsch. **73**: 444 (March) 1932.

[3] Lindemann, Hans: Ztschr. f. Hyg. u. Infektionskr. **113**: 283 (Jan. 16) 1932.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

August 8.	Poisonous Snakes.
August 10.	Vesalius and Anatomy.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

August 13. First Aid.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Fluorine Content of Drinking Water.—At least forty-five communities where mottled enamel of the teeth is endemic have been revealed as the result of investigations carried on in the past year throughout the state. About 110 public and 55 private water supplies have been analyzed. Practically every community in the state with a population large enough to warrant investigation was visited, and the occurrence or absence of mottled enamel was recorded. Examination was made of the permanent teeth of school children, and the water supply was sampled at the time of the examination. The majority of the communities in which mottled enamel was found lie along two rivers, the Gila and the San Pedro. In the summer of 1930, the department of human nutrition of the University of Arizona began a study of the cause of mottled enamel in St. David, a community in which detailed family histories of the inhabitants showed that all persons born and reared there had mottled enamel. Dietary studies showed no deficiency that could account for the defect. Analysis of the water from St. David and other communities in which the condition was endemic showed abnormal amounts of fluorine. When residue left after evaporation of the water was included in the ration of rats, a condition similar to mottled enamel, if not identical with it, was produced. Practical methods for the removal of the fluorine from public water supplies are being investigated as the result of these studies.

CALIFORNIA

Personal.—Dr. Walter E. Coppedge has been appointed city health officer of Alturas, succeeding Dr. Alexander Gibson.

Hospital News.—Eighty thousand dollars is available for the construction of a state central research pathologic laboratory at Agnew State Hospital, Agnew. Appropriation has also been made for a $50,000 biennial support fund for the project.

Society News.—The Orange County Medical Society was addressed, June 7, among others, by Dr. Arthur E. Guedel, Beverly Hills, on anesthesia.——At a meeting of the San Bernardino County Medical Society, June 7, Dr. Samuel B. Pond spoke on "The Psychosis and Its Treatment in General Practice," and Dr. Aaron J. Rosanoff, Los Angeles, "The Genetic History of Human Intelligence."——A recent meeting of the San Joaquin County Medical Society was addressed by Dr. Rulon S. Tillotson, Woodland, on "The Nasal Accessory Sinuses as Sources of Infection," and Dr. George N. Hosford, San Francisco, "Yellow Oxide of Mercury Salve (Pagenstecher's Ointment)—Its Use and Abuse."——Dr. Arthur L. Bloomfield, San Francisco, discussed "The Question of Gastric Analysis in Relation to Disease," June 15, before the Santa Clara County Medical Society.——Speakers before the Sonoma County Medical Society, June 9, in Petaluma, were Drs. Archie A. Alexander on "Modern Views on Hypertension"; William Whitfield Crane, Jr., "Kidney Hazards in Surgery," and Robert A. Glenn, "Interpretations of Kidney Functional Tests." All the speakers were from Oakland.

FLORIDA

Society News.—Lieut. Wilbur E. Kellum, Pensacola, among others, addressed a recent meeting of the Escambia County Medical Society on advances in aviation medicine.

Personal.—Dr. George C. Tillman, Gainesville, was installed as president of the Florida Railway Surgeons' Association at its recent annual meeting, and Dr. Jack Halton, Sarasota, was named president-elect.

GEORGIA

Society News.—The following program was presented before the Fulton County Medical Society, July 21: W. S. Elkin, Jr., Ph.G., "Duties of the Pharmacist in His Relations to the Physician"; T. C. Marshall, Ph.G., "Duties of the Pharmacist in Connection with His Services to the Public"; Drs. Carl C. Aven, "Duties of the Physician in His Relation to the Pharmacist," and Lewis M. Gaines, "Physician's Responsibility to the Public as Users of Drugs."

Meeting of Valley Medical Association.—Dr. Seale Harris, Birmingham, Ala., was named president of the Chattahoochee Valley Medical and Surgical Association at its thirty-second annual session at Radium Springs, Albany, July 12-13. The vice presidents are Drs. Robert C. Pendergrass, Americus, Ga., and John S. Turberville, Century, Fla., and the secretary, Dr. William J. Love, Opelika, Ala. The scientific program included the following speakers: Drs. Edgar F. Fincher, Atlanta, "Diagnosis and Treatment of Trifacial Neuralgia"; Charles E. Boynton, Atlanta, "Some of the Hazards of the First Year of Life," and Lonnie W. Grove, Atlanta, "Carcinoma of Colon."

ILLINOIS

Society News.—Dr. Fred Z. Havens, Rochester, Minn., addressed the Franklin County Medical Society at Benton, June 23, on "Malignancies About the Face."——Dr. Garold V. Stryker, St. Louis, addressed the Effingham County Medical Society, July 14, on "Epidermophytosis."

Crippled Children's Clinic.—The Warren County Medical Society, Monmouth, sponsored its annual summer clinic for crippled children, July 14. Seventy-five children were treated, half of whom were new patients. Their ages ranged from six months to fourteen years. Dr. Philip H. Kreuscher, Chicago, was in charge.

Chicago

Personal.—Dr. William H. Walsh has been engaged as technical adviser to the special committee of the Monterrey branch of the Mexican Medical Association by the governor and secretary of state of Nuevo Leon, Mexico, to assist in the planning, organization and equipment of the proposed medical center at Nuevo Leon, noted in THE JOURNAL, July 2, page 44.

KENTUCKY

Personal.—Dr. Charles H. Voorhies, city health officer of Lexington for eleven years, has resigned because of ill health. He was succeeded by Dr. Garland L. Weidner, Saginaw, Mich., formerly of Kentucky.——Dr. Joseph S. Goodpaster, Owingsville, has been appointed health officer of Bath County to succeed Dr. Elijah H. Maggard, who has been made superintendent of the Eastern State Hospital for the Insane, Lexington.——Dr. Fred W. Caudill, Hazard, has been appointed director of the Scott County health department, succeeding Dr. Edward R. Davies, who resigned several months ago to accept a similar position in West Virginia. Dr. Henry V. Johnson has been acting head of the department.——Dr. Henry H. Moody has been appointed health officer of Cynthiana.——Dr. S.

Spafford Ackerly, New Haven, Conn., has been appointed director of the Louisville Psychological Clinic to succeed Dr. Francis J. O'Brien, who resigned to become assistant director of the bureau of child guidance recently established in the New York City school system.

School for Health Officers.—The annual school for health officers conducted by the state board of health in Lexington, June 13-18, the most successful in the twenty-two years of its existence, was attended by about 100 health officers. Included among the speakers were Drs. Allen W. Freeman, professor of public health administration, Johns Hopkins School of Hygiene and Public Health, Baltimore, "Public Health Administration"; Winfield K. Sharp, Jr., director, county and other local health work, Tennessee state department of health, Nashville, Tenn., "Problems in County Health Work"; George A. Wheeler and Joseph W. Mountin, both of U. S. Public Health Service, Washington, D. C., "Pellagra" and "Rural Sanitation," respectively. Dr. Arthur T. McCormack, state health officer, opened the school with a lecture on "The Health Worker — Personal Deportment." Special features were addresses by Drs. Freeman and Irvin Abell, Louisville. The annual school this year marked the inauguration of a five weeks course in public health at the summer sessions of the University of Kentucky, the state board and the University cooperating, with a view to providing special training to physicians and others wishing to enter the public health field.

LOUISIANA

New Tumor Clinic.—Charity Hospital, Shreveport, formally opened its new tumor clinic department, July 12. The unit is equipped with a modern valve tube of 280,000 volts, a 30 milliampere high voltage therapy machine and a shockproof low voltage therapy treatment stand. Additional equipment includes 150 mg. of radium, distributed in fifty-three platinum and monel needles with accessories; radium work bench with protective booth, and a modification of Holfelder's field selector for the charting of patients for high voltage therapy, together with a complete clinical photographic department.

Memorial Meeting.—The Sixth District Medical Society designated its annual meeting in Baton Rouge, July 14, as a memorial to Dr. Robert P. Jones. Dr. Carl A. Weiss, Baton Rouge, president-elect, state medical society, delivered the eulogy. Other speakers on the scientific program included Drs. Arthur Vidrine, New Orleans, on "Review of Common Displacements of the Uterus"; Roy C. Young, Shreveport, "Encephalography in the Study of Convulsive States"; Philip H. Jones, Jr., New Orleans, "Some Considerations in Regard to Serum Proteins and Edema," and Cecil O. Lorio, Baton Rouge, "The Nervous Child." Dr. Lester J. Williams, Baton Rouge, was elected president to succeed Dr. Francis F. Young, Sr., Covington, and Dr. Cecil O. Lorio, Baton Rouge, secretary, to succeed Dr. Hezzie D. Bulloch, Covington. Following the meeting, the retiring president, Dr. Young, entertained the society at a banquet.

MARYLAND

Personal.—The honorary degree of doctor of Hebrew letters was conferred on Dr. Harry Friedenwald, emeritus professor of ophthalmology, University of Maryland School of Medicine, Baltimore, at the seventh commencement exercises of the Jewish Institute of Religion, June 5, in New York.

Report of Model Health Unit.—Six tuberculosis clinics involving 144 chest examinations were conducted by the Anne Arundel Health Department in the first six months of 1932, according to a report issued July 5. This department was instituted in 1931 as a model health unit to work out programs of preventive medicine with emphasis on sanitation. It is maintained by the Rockefeller Foundation, Johns Hopkins School of Hygiene and Public Health, state health department and the county commissioners. Dr. John H. Janney, Jr., who has been connected with the International Health Division of the Rockefeller Foundation since 1921, is director of the unit. Among other things, nearly 2,000 laboratory examinations were made and 99 cases of communicable disease supervised. One hundred and sixty-eight examinations were made at twenty-six prenatal clinics in the county; 757 children were examined at health conferences; 3,539 children were examined in visits to schools, and 580 home visits to school children were made. Seventy-six inspections of dairy farms and twenty-nine inspections of camps were made. Anne Arundel County was selected as the most adaptable for this research work because it has a large population and is near Baltimore, and because its many rivers and shore lines create complicated health problems (The Journal, Aug. 22, 1931, p. 545).

MASSACHUSETTS

State Department Distributes Paralysis Serum.—The Boston Floating Hospital has been selected by the state department of health as one of its stations for the distribution to physicians, under prescribed conditions, of serum used in the treatment of infantile paralysis. This work, formerly conducted by the Harvard Infantile Paralysis Commission, is to be assumed by the state department of health during the coming fall. The consultation service will be furnished by the combined staffs of the Floating Hospital, the children's department of the Boston Dispensary and the pediatric department of Tufts College Medical School.

Dr. Pierce Honored.—The Dorchester Medical Club and other friends recently observed the completion of fifty years in the practice of medicine by Dr. Matthew Vassar Pierce, Milton, at a dinner. Dr. John W. Bartol, Boston, was toastmaster. The Dorchester Medical Club, of which Dr. Pierce is the senior member, is the oldest medical dining club in Greater Boston. It was formed by physicians of Dorchester and Milton in 1866 "for the purpose of professional improvement and social enjoyment." Monthly, since its organization, except during the summer, one member entertains the others at dinner and a second member reads a paper. During the sixty-six years of its existence, only forty-four physicians have been elected to membership. Dr. Pierce has been on the club's roll since 1882. He graduated from Harvard Medical School in 1880.

MICHIGAN

Training School for Nurses Discontinued.—Announcement has been made of the discontinuance of the training school for nurses at St. Luke's Hospital, Saginaw, August 31. With the exception of members of the senior class of nurses, who will graduate in September, all student nurses will be transferred to Hurley Hospital School of Nurses in Flint during August. After October 1, St. Luke's will be operated entirely by graduate nurses.

University News.—Dr. Albert C. Furstenberg, associate professor of otolaryngology, University of Michigan Medical School, Ann Arbor, has been appointed professor in the department, succeeding the late Dr. Roy Bishop Canfield. Dr. Francis B. Fralick was promoted to assistant professor in ophthalmology. Dr. Vernon L. Hart has resigned as assistant professor of surgery at the school, to become head of the Miam Clinic, Dayton, Ohio, it is reported. Dr. John Alexander has been promoted to professor of surgery. The Children's Fund of Michigan will continue its support in dental research at the university.

Districts for Poliomyelitis Service.—The Michigan Commission on Infantile Paralysis, Lansing, has again divided the state into districts for the purpose of consultant service and distribution of serum in the treatment of poliomyelitis. An outbreak is not expected, the announcement states, but it is the commission's wish to be prepared during the present season when a rise in the incidence of the disease may be expected. Convalescent serum will be furnished without charge, but only through the regional directors and their duly appointed consultants. Instruction has been given to these distributors to supply serum for cases only when there are clearly manifested symptoms indicating poliomyelitis and when a spinal fluid examination has confirmed the diagnosis.

NEW HAMPSHIRE

Institute on Obstetrics.—Dr. James R. McCord, professor of obstetrics and gynecology, Emory University School of Medicine, Atlanta, Ga., began a six weeks institute in obstetrics, July 6, in several counties throughout the state. The cities in which the series is being conducted are as follows: Rochester, Manchester, Nashua, Laconia, Portsmouth, Concord, Peterboro, Hanover, Ossipee, Berlin, Whitefield, Claremont and Keene.

NEW MEXICO

Personal.—Dr. Charles Howe Eller, Albuquerque, has been appointed health officer of Valencia County, it is reported.——Dr. Robert O. Brown, Santa Fe, was elected president of the New Mexico Social Hygiene Association.——Drs. James W. Laws and Charles F. Rennick, El Paso, Texas, presented papers on diseases of the chest and infant feeding, respectively, at a meeting of the Grant County Medical Society, Fort Bayard, recently.

NEW YORK

Heart Clinic in Syracuse.—The first heart clinic in Syracuse was started recently by the Onondaga Health Association. The plans for this clinic, which is held at the Syracuse Free Dispensary, were developed by a committee of physicians and laymen. Dr. Edward C. Reifenstein, professor of clinical medicine, Syracuse University School of Medicine, is chief of staff for the clinic. The Milbank Memorial Fund contributed an electrocardiograph, a basal metabolism apparatus and other equipment to the clinic.

Interstate Medical Meeting.—The Medical Society of Chautauqua County sponsored a meeting of physicians of the surrounding territory in New York, Pennsylvania and Ohio at Chautauqua, July 27. Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, addressed the meeting on "The Trends of Private Practice" and also gave a public address on "Foods, Fads and Follies." Among other speakers were Drs. James F. Rooney, Albany, on "Hypertensive and Arteriosclerotic Heart Disease," and Joseph Colt Bloodgood, Baltimore, "Activities in the Control of Cancer in London and Paris." Dr. Louis C. Kress, Buffalo, presented an exhibit of pathologic material. A golf tournament was held in the afternoon.

New York City

Physicians to Lecture on Psychology.—Among lecturers announced for the fall program of the New School for Social Research are Drs. David M. Levy of the Institute for Child Guidance, who will give two courses on "Behavior Problems in Children" and "Case Studies in Mental Hygiene," and George K. Pratt of the National Committee on Mental Hygiene, who will give a course in mental hygiene for teachers.

Course in Orthopedic Surgery.—The New York Post-Graduate Medical School of Columbia University will offer an intensive course in the theory and practice of orthopedic surgery and bone and joint surgery, including treatment of malunited and ununited fractures, October 24-29. Dr. Fred H. Albee, professor of orthopedic surgery, will be in charge of the course, which will be for medical graduates. Lectures and demonstrations will include operative clinical demonstrations in surgery of the bones and joints, manufacture and fitting of artificial limbs and compensation relationships.

Personal.—Dr. James Louis Joughin, clinical professor of neurology, New York Post-Graduate Medical School and Hospital, has been appointed director of the department to succeed the late Dr. Michael Osnato. Pursuant to the terms of the agreement between Columbia University and the New York Post-Graduate, Dr. Joughin was appointed acting executive officer of the department of neurology at the postgraduate school.——Dr. Chrisman G. Scherf has recently been transferred from the superintendency of Coney Island Hospital to that of Sea View Hospital, Staten Island.——Dr. Florence Rena Sabin of the Rockefeller Institute for Medical Research was awarded the first "National Achievement Award" conferred by the Chi Omega Sorority at a meeting in White Sulphur Springs, W. Va., June 27. The award was a medal executed by Miss Frances Grimes.——The University of Rochester recently conferred the honorary degree of doctor of science on Dr. James Ewing, professor of pathology, Cornell University Medical School.

OHIO

Counties Receive Joint Aid.—The rural health section of the U. S. Public Health Service and the International Health Board of the Rockefeller Foundation made available, July 1, a joint apportionment of $8,500 to enable five counties to continue health work on a whole time basis. The counties are Hocking, Fayette, Medina, Shelby and Richland. On account of the economic stress, these counties, which have had good public health service, were tending toward abridged part time service, *Ohio Health News* states.

Society News.—The Portage County Medical Society was addressed, June 2, in Kent, by Dr. Claude B. Norris, Youngstown, on "Management of Ordinary Skin Disorders."——At a meeting of the Athens County Medical Society in Athens, June 6, Dr. Arthur G. Helmick, Columbus, spoke on "Diarrheal Diseases of Children."——Dr. Fred Fletcher, Columbus, addressed the Guernsey County Medical Society in Cambridge, June 2, on "Handicap Surgical Risks."——A symposium on unusual experiences in obstetrics constituted the meeting of the Hempstead Academy of Medicine in Portsmouth, June 13.——Dr. Mark Millikin, Hamilton, addressed the Crawford County Medical Society in Bucyrus, June 6, on "Recent Ideals of the Social Aspects of Medicine."

Comparative Study of Births and Deaths.—In a recent report of the births and deaths in Ohio during the period 1910-1930, five low years were recorded in the tabulation for deaths: 1921 with a rate of 11.3; 1922, 11.3; 1924, 11.2; 1927, 11.3, and 1930, 11.4. In the comparative data for 1930, Gallia County had the highest death rate (19.4) among the eighty-eight counties of the state, and Summit County, the lowest, with a rate of 7.7. It was pointed out, however, that Gallia County is the seat of a state institution and that among the counties not having a state institution, Morgan County with a death rate of 17.9 had the highest rate. The city without a state institution having the highest death rate (20.4) was Kenton. The lowest death rate (3.5) for any city was recorded in Grandview. In the twenty year study of births, three low years were noted: 1912 with a rate of 16.9; 1929, 17.3, and 1930, 17.6. In the statistics for 1930, Scioto County with 1,990 births and a rate of 24.4 led all the counties of the state, and Carroll County with 193 births and a rate of 12 had the lowest birth rate. Among the cities, Wadsworth with 187 births had the highest birth rate (31.5), and Oakwood, with four births, the lowest rate (0.6).

OKLAHOMA

Society News.—Drs. Hugh G. Jeter and Francis E. Dill, Oklahoma City, presented a discussion of arthritis before the Garfield County Medical Society, Enid, in May.——Dr. Arthur S. Risser, Blackwell, addressed the Kay County Medical Society, May 23, at Tonkawa, on obstructive lesions.——At a meeting of the Woods-Alfalfa County Medical Society, Alva, May 17, Dr. Henry H. Turner, Oklahoma City, among others, spoke on undulant fever.——Dr. William M. Jones, Tulsa, among others, addressed the Okmulgee County Medical Society, Henryetta, May 16, on sinus operations under local anesthesia.——Dr. John T. Wharton, Durant, recently addressed the Bryan County Medical Society on "Classification of Physical Findings of World War Veterans." Dr. Battey B. Coker, Durant, was host to the society on this occasion.——Speakers before the Southern Oklahoma Medical Association, June 14, at Anadarko, included Drs. Ephraim Goldfain, Oklahoma City, on "Common Sense Management of Chronic Arthritis," and Charles P. Bondurant, Oklahoma City, "Diseases of the Oral Mucous Membrane."——A recent meeting of the Jackson County Medical Society was addressed at Waurika by Drs. William P. Rudell, Altus, and Jesse Bird, Eldorado, on "Specific Urethritis and Complications" and "Breech Presentations Management," respectively.

PENNSYLVANIA

Personal.—At the recent centennial exercises of Gettysburg College, Gettysburg, honorary degrees of doctor of science were conferred on Drs. Edmund W. Meisenhelder, York, and John McCrea Dickson, Gettysburg.

Society News.—Dr. Elliott P. Joslin, Boston, conducted a clinic and gave an address on diabetes before the Fifth Councilor District Medical Society in York, July 28. Dr. Eldridge L. Eliason, Philadelphia, talked on "Surgical Aspects of Diabetes." Following a dinner at the York Country Club, Dr. William H. Mayer, Pittsburgh, president, Medical Society of the State of Pennsylvania, made an address entitled "New Responsibilities—Old Ideals" and Dr. Walter F. Donaldson, Pittsburgh, on "The Threat of Socialization."

Philadelphia

The Visit of Sir Henry Wellcome.—Sir Henry S. Wellcome, class of 1874, visited for the first time the new buildings of his alma mater, the Philadelphia College of Pharmacy and Science, June 24. Preceding a luncheon given in his honor, Sir Henry placed a wreath on the grave of Dr. W. W. Keen. In the afternoon, at the college, he was presented with a facsimile reproduction of his graduation thesis and replicas of the molds and models that accompanied it. He plans to place these in the London museum which he founded. Sir Henry was recently elected a fellow of the Royal Society of England.

TENNESSEE

Hospital News.—The Emerald-Hodgson Hospital, Sewanee, which was destroyed by fire in December, 1931, has been rebuilt. Dedication ceremonies were held, June 12.

Society News.—Dr. Tom R. Barry addressed the Knox County Medical Society, Knoxville, June 14, on renal tuberculosis.——Dr. D. Lesesne Smith, Spartanburg, S. C., addressed the Sullivan-Johnson Counties Medical Society, Bristol, June 1, on preventive pediatrics.——Dr. Aareiel E. Goodloe addressed the Hamilton County Medical Society, Chattanooga, June 30, on the larynx and its diseases.——Dr. Eugene M. Regen presented a report on "Four Consecutive Generations of Congenital Dislocated Hip" at a meeting of the Nashville Academy of Medicine and the Davidson County Medical Society, May 28. ——Drs. Barney Brooks and Hugh J. Morgan, Nashville, addressed the medical society of Carroll, Henry, Weakley and Benton counties at a meeting in McKenzie, June 14, on diseases of the gallbladder and hypertension, respectively.——Dr. Charles C. Stockard, Lawrenceburg, among others, addressed the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society in Hohenwald, June 28, on "Treatment of Placenta Praevia."——Dr. Granderson Hearn Bradley, Nashville, spoke on "Feeding of Infants and Children," June 14, before the Williamson County Medical Society.

VIRGINIA

Study of Public Health Methods.—The Milbank Memorial Fund is cooperating with the U. S. Public Health Service in a study of public health administration in the counties of Greenville and Brunswick. Edgar Sydenstricker, director of the fund's division of research and statistician in the public health service in an advisory capacity, was requested to assist in preparing the plans for this study. The quarterly bulletin of the fund describes this as the first of a series of studies to be undertaken by the office of studies of public health methods of which Dr. Joseph W. Mountin, surgeon, U. S. Public Health Service, is in charge. The public health activities in these two counties are under the administration of one full time health officer, and his staff consists of two public health nurses, one sanitary inspector and a clerk. The two counties have a total population of about 30,000, thus offering a contrast in public health facilities and procedures to those developed in Cattaraugus County, New York.

Society News.—At a meeting of the Medical Association of the Valley of Virginia at Harrisonburg in May, speakers included Drs. Claude C. Coleman and Roy K. Flannagan, Richmond, on surgical conditions of the brain and spinal cord and childhood tuberculosis, respectively.——Among others, Dr. Douglas G. Chapman, Richmond, addressed the Southside Virginia Medical Association at its quarterly meeting in Suffolk, June 14, on the valves of the heart.——Among other speakers, Drs. Charles H. Peterson and Albert F. Doyle addressed the Roanoke Academy of Medicine, June 6, on gallbladder disease and recurrent ectopic pregnancy, respectively.——Dr. Everett C. Drash, University, among others, presented a paper on benign tumors of the chest at a meeting of the Piedmont Medical Society, Orange, June 2.——The Old Dominion Medical Society, at its annual meeting in Richmond, June 14-16, installed Dr. Edward B. Harris, Nottoway, as president. Dr. Philip A. Scott, Newport News, was made president-elect, and Dr. James H. Blackwell, Jr., Richmond, secretary. The next annual session will be held at the Bay Shore Hotel, Buckroe Beach. This society is composed of Negro physicians of Virginia.

GENERAL

Directory of Occupational Therapists.—The first National Directory of Qualified Occupational Therapists contains a classification of registrants by states and counties. All therapists listed in it were registered during 1931. The American Occupational Therapy Association at 175 Fifth Avenue, New York, at its annual meeting in 1930 approved the plan for this directory. Two divisions compose the directory: the main register for persons qualified to register as "occupational therapist, registered," and the secondary register, for persons qualified to register as "occupational assistant, registered."

Institute on Health Education.—The first institute on health education to be conducted by the public health education section of the American Public Health Association will be held at Hotel Willard, Washington, D. C., immediately preceding the annual meeting of the association, October 24-27. The purpose of the institute is to provide instruction in the content and methodology of health education to a limited number of persons actively engaged in health education. Discussions will be held on health education instruments, sources of information, building programs, and program execution. A registration fee of $5 will be required.

Automobile Fatalities in Four Weeks.—The U. S. Department of Commerce announces that, during the four weeks ended July 9, eighty-six large cities in the United States reported 522 deaths from automobile accidents, as compared with 695 deaths during the four weeks ended July 11, 1931. Most of these deaths were the result of accidents which occurred within the corporate limits of the city. For the fifty-two week periods ended July 9, 1932, and July 11, 1931, the totals for the cities were, respectively, 8,616 and 9,217, which indicate a recent rate of 23.9 per hundred thousand of population as against an earlier rate of 26. Six cities reported no deaths from automobile accidents for the last four weeks, while nine cities reported no deaths from automobile accidents for the corresponding period of 1931.

Society News.—Officers of the Pacific Northwest Medical Association, for the ensuing year, are as follows: president, Dr. Bertram D. Gillies, Vancouver, B. C.; president-elect, Dr. Fred F. Attix, Lewistown, Mont.; vice presidents, Drs. John T. Wood, Coeur d'Alene, Idaho, and Matthew C. Riddle, Portland, Ore.; secretary, Dr. Frederick Epplen, Seattle, and executive secretary, Dr. Clyde W. Countryman, Spokane. The next annual meeting of the association will be held in Vancouver, B. C., June, 1933.——Mr. J. R. Smiley, superintendent, St. Luke's Hospital, Kansas City, Mo., was elected president of the Midwest Hospital Association, at its sixth annual conference, June 2-3, in St. Louis, and Mr. George W. Miller, superintendent, Morningside Hospital, Tulsa, Okla., president-elect. The next annual meeting will be held in Kansas City.——The American Pharmaceutical Association and the Canadian Pharmaceutical Association will meet jointly at the Royal York Hotel, Toronto, August 22-27.

A New Kind of Impostor.—A man recently registered at a hotel in Bristol, Tenn., under the name of "Dr. Wilson." Following his deposit of a large check, drawn on a Cincinnati bank, in a local bank, he introduced himself to the manager of a local hospital, stating that he had come to practice urology. He had a stethoscope prominently displayed in his side coat pocket. At the hospital he left several new hemostats and a pair of stitch scissors. He asked the requirements for being admitted to the staff. However, he made the mistake of asking if it would be necessary for him to be registered in Tennessee in order to practice. The hospital refused to cash his check, as did all the drug stores in the city. That evening he asked one of the doctors he had met to lend his car to him so that he could drive his "wife" around to see the city. The physician refused, and the man rented a car and disappeared. This person claimed to be a graduate of Tulane University and said he was registered in Louisiana, California and Colorado.

Eye Accidents in Child Play.—The National Society for the Prevention of Blindness has recently made a study of eye accidents suffered by children, based on newspaper reports for a three-month period. The annual total of cases noted in newspapers, estimated from this period, is from 750 to 1,000 cases. Almost one third of the cases in this study were caused by weapons and almost a fourth by fireworks. A survey of the legislation designed to prevent these accidents showed considerable variety among 102 cities of more than 50,000 population. Although 76 per cent of the cities had some regulation, in few of them was it broad enough to cover all types of weapons that cause eye accidents. Denver alone prohibits the making of air guns, which are the most important among weapons as the cause of accidents, but 63 per cent of the cities reporting have ordinances prohibiting their sale, use or possession. It was found that in schools and classes for the blind there are 500 pupils whose blindness was caused by accidents and about 70 are added each year.

Birth and Deaths of Infants in 1930.—Reports issued by the U. S. Department of Commerce indicate that there were 2,203,958 live births in the U. S. birth registration area in 1930, an increase of 34,038 over the preceding year. New Mexico had the highest rate (28.5) and Oregon the lowest (14.1). Comparison of the rates for white and Negro populations showed that the rate for the white race was 18.7 and for the Negro 20.7 for the area as a whole. In some states the rate for the white population was larger than that for the Negro—for example, Arkansas, Kentucky, Oklahoma and Tennessee. In the same area 1,321,367 deaths occurred, a rate of 11.3 per thousand of population. The number of infant deaths was 142,413, a rate of 64.6 per thousand live births. This compares with a rate of 67.6 in 1929. New Mexico, with the highest birth rate, had also the highest infant mortality rate (145.4). Washington had the lowest, 48.7. Comparing the statistics for the white and Negro populations, it appears that the white had a rate of 59.6 and the Negro 102.4. The report points out that unusually high rates are frequently due to the fact that a city is a hospital center and similarly that very low rates indicate that inhabitants use other areas for hospitalization. Consideration should also be given to the nature of the population. The birth registration area includes 94.7 per cent of the estimated total population of the United States.

FOREIGN

Lectures on Medical Photography.—Dr. Charles Claoué and Mr. Jean Painleve, Paris, will give a series of lectures on medical photography in Paris, October 10-15, according to an announcement. They will emphasize especially photographic documentation in otorhinolaryngology and in plastic surgery. For information address Dr. Claoué, 1 rue Singer, Paris, 16.

Course in Hospital Technic.—The International Hospital Association is sponsoring a graduate course in hospital technic at the Municipal and University Hospital, Frankfort-on-Main, Germany, September 29 to October 8. The courses will consist of lectures, demonstrations, visits to hospitals and discussions. Applications should be made to Geheimrat Dr. Alter, 5, Moorenstrasse, Düsseldorf, Germany.

Florence Nightingale Foundation.—At a meeting in London, July 6, a British council was appointed to cooperate with similar councils in other countries in the establishment and operation of an International Florence Nightingale Foundation. According to the *Lancet*, the memorial will continue and develop, by the endowment of additional scholarships, the graduate courses for nurses which the League of Red Cross Societies, with the cooperation of Bedford College and the College of Nursing, is now conducting in its training center in Manchester Square.

Prize for Treatment of Glaucoma.—The British Medical Association will award the Middlemore Prize in 1933 to the author of the best essay on the treatment of glaucoma. The prize was founded in 1880 by Mr. Richard Middlemore, Birmingham, and is awarded annually for the best essay or work on any subject which the council of the British Medical Association may select in any department of ophthalmic medicine or surgery. It consists of a check for £50 and an illuminated certificate. Essays must reach the medical secretary, British Medical Association House, Tavistock-Square, London, W. C. 1, on or before December 31, signed with a motto only and accompanied by a sealed envelop marked on the outside with the motto and containing the name and address of the author.

Society News.—An International Congress of Mediterranean Hygiene will be held in Marseilles, September 20-25, under the presidency of Professor Marchoux of Pasteur Institute, Paris, and under the auspices of the Faculty of Medicine of Marseilles. Dr. Emile Roux, director, Pasteur Institute, Paris, and Mr. A. Honnorat, former minister of public instruction, are honorary presidents. Those who wish to register as members may have full information from Prof. H. Violle, Faculté de Médecine, Palais du Pharo, Marseilles, or from Dr. Charles Broquet, 195 Boulevard St. Germain, Paris.——The tenth International Congress of Psychology will be held in Copenhagen, Denmark, August 22-27.——The third Congress of the French Scientific Society for Reparative, Plastic and Esthetic Surgery will be held in Paris, October 7-8, under the presidency of Dr. Dartigues. The program will include an exhibition of instruments, casts and books concerning esthetic surgery. Further information may be had from Dr. Dartigues, 81 rue de la Pompe, Paris, 16, or the secretariat of the society care of Dr. Charles Claoué, 1 rue Singer, Paris, 16.

Outbreak of Cholera.—More than 700 deaths have been reported in China, where an outbreak of cholera has been epidemic since about the fifteenth of May, the New York *Times* states. In Tientsin, up to June 25, there were 350 deaths in the hospitals; the number outside the hospitals was not known. Since May 23, when it was discovered, and up to July 1, 329 cases of the disease with 77 deaths, all of natives, were reported in Nanking. In Shanghai it was not known when the epidemic started but, up to July 9, 1,337 cases were reported with 82 deaths, of which 27 were foreigners (no Americans). These figures are described, the *Times* states, as a conservative estimate covering the International Settlement and Greater Shanghai. In Amoy, 15 cases and 11 deaths were reported in the week ended July 2; Canton, 487 cases and 180 deaths to July 2, including 104 cases and 22 deaths in the week ended July 2; Hankow, 14 cases and 3 deaths to June 18; Hongkong, 84 cases and 60 deaths to July 9; 33 cases and 33 deaths the week ended July 9, and Swatow, 5 cases and 3 deaths to July 9. Through a cablegram to the U. S. Public Health Service, it was learned that two cases of cholera had been reported aboard the *President Wilson* among steerage from Honolulu via Shanghai-Hongkong, the report continued.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 9, 1932.

Unsolved Problems of Vision

It might be thought that the attention given to vision by the greatest physicists and physiologists for over a century would have left no fundamental problems to be solved. This is not so. At the Imperial College of Science and Technology a meeting of the Physical and Optical Societies has been held. A discussion took place on problems of vision in which representatives of the United States, Canada, Germany, Italy and Finland took part. Professor Peddie of Dundee pointed out that, with the single exception of the theory of light itself, there was no such prolonged and intense divergence of view as on the subject of vision. He attributed this fact to the complexity of the phenomena and to purely subjective impressions being in question. Sir John Parsons (ophthalmologist) said that the visual apparatus was exasperating to the physicist. It was an analyzing instrument similar to but far more complicated than the measuring instruments with which he was familiar. Its variations were protean and it combined the functions of telescope, microscope, photometer, colorimeter and camera. In the eye were two receptive systems, one acting at low intensities of light and the other at high, and their responses were quantitatively, qualitatively and spatially different. It was not known whether the two were always in action at the same time or acted reciprocally on each other. All investigators, psychologists as well as physicists, seemed to agree that visual sensation was adequately described in terms of hue saturation and brightness. Yet the problem of the relation between brightness and saturation troubled Helmholz and had not yet been solved. The trichromatic theory explained color mixture and the unsaturation of spectral hues on the basis of stimulus values but failed to explain the luminosity curve of the photopic spectrum.

Dr. Hecht put forward a new theory of color vision. He said that there were probably at least two causes of color blindness—changes in the nervous system and changes in the retina—and at present it was not known how to separate the two. It seemed that the spectral characteristics of one of the receptors were changed, so that it became identical with one of the others. Thus a photosentitive substance in the green cones might become changed so that its absorption spectrum and probably its chemical constitution became identical with that in the red cones. Professor Drever of the psychologic laboratory of Edinburgh University held that yellow must be given the status of a fundamental color. In color theory one was not justified in looking on it merely as a mixture of red and green. Mr. Banister of Cambridge, in discussing retinal reaction time, showed the importance of the fact that the time taken to react to a visual stimulus was much greater in poor than in good light. Hence the difficulty of driving a car at twilight. The pedestrian or other object was observed a fraction of a second later than usual, and if the car was traveling fast this might represent a considerable distance on the road.

The "Patent Medicine" Fraud

In spite of all the exposures of the "patent medicine" fraud, it continues to flourish. The Advertising Association maintains an "Investigating Department" which is supposed to prevent and detect fraudulent and improper advertising, but glaring examples of this continue not only in small and obscure but even in the most widely read and the most influential journals. Only the few papers in this country which do not print such advertisements will mention the scandal at all.

Many years ago the British Medical Association published a book called "Secret Remedies," which gave the analysis of all the well advertised nostrums, in the hope that this would give a final blow to fraudulent claims. Many of the proprietors were angry at first, but the more astute turned this publication to account. In hundreds of markets all over the country, eloquent and loud-voiced men extol the merits of vaunted nostrums on the ground that they are in accord with the prescription in "'Secret Remedies,' as guaranteed by the British Medical Association."

The Danger of Using Gasoline for Cleaning

The recent case in which a woman was cleaning a garment with gasoline in the open air and far from any flame, when a blaze occurred and she was burned to death, has directed attention to this danger. When dry fabrics, particularly silk, are rubbed in dry weather, electric sparks can be obtained. When fabrics are washed in water no such effect takes place, because water is a good conductor of electricity without the need of the leap through the air which constitutes a spark. Gasoline, on the contrary, is a nonconductor and may on its own account give rise to sparks when subject to friction with insulating materials. Therefore those who have the handling of gasoline in quantity, through nonmetallic hose pipes, are careful to lead any electricity generated to earth by means of a chain or wire. Serious explosions have occurred through neglect of this precaution. The use of gasoline for dry cleaning involves a risk which the utmost care cannot quite remove. A correspondent in the *Times* states that to do the job indoors amounts to criminal negligence. If done in the open, not only should the greatest care be taken to keep away from the lights (invisible gasoline will stream across the ground for yards and ignite from a flame at a surprising distance), but it should be assumed that there is always a slight chance that the gasoline will flare up spontaneously by electrical ignition. It is recommended that any fabric should be kept beneath the surface of the gasoline and that actual rubbing, as in washing a garment, is unnecessary and should be avoided. The better plan is to squeeze and stir the article about with a stout stick. Finally it may be cautiously wrung out by hand. In general it is best to keep the hands out of the gasoline. The gasoline should always be dried out of the article in the open air, never in the house.

The Indian Medical Service

At the annual dinner of the Indian medical service, which took place in London, great attention was called to realities in the situation in India ignored by politicians. Major Gen. J. W. D. Megaw, director general of the service, said that there was no hope for India unless it had an efficient medical and public health organization. The huge population of over 300 millions, which was rapidly increasing, was engaged in a constant struggle for a precarious existence. None of the proposals of party politicians in India could influence to any appreciable extent the great elemental forces now ruthlessly at work. The problem of India was essentially biologic and not political. He claimed that the first duty of medical research workers was to make a clear statement of the nature of the problem and the solution. But medical and public health workers could not deal with the situation alone; they needed the cooperation of experts in agriculture, industry, economics and education. India was rapidly reaching a situation that would demand the united efforts of Indians and Europeans. When that time came a strong all-India medical service would be a matter of vital importance.

Sir Samuel Hoare, secretary of state for India, said that the Indian medical service had been the pioneer of scientific work in the East and its work was not confined to medical science but extended to botany, zoology, geology, veterinary science, forestry and philology. When the history of India came to be written, it would be found that the benefits Britain had conferred on it far outweighed any material advantages she might have gained. There was the work of Ross, which had diminished the dangers of malaria. Thanks to Sir Leonard Rogers, it was now possible to cure leprosy in its early stages. Deaths from cholera had been reduced from 60 to 20 per cent. Successful campaigns had been carried on against liver abscess and kala-azar. The work of the Indian medical service was far from finished; it was only beginning to enter on a new and greater advance.

PARIS

(From Our Regular Correspondent)

June 29, 1932.

International Conference on Mental Hygiene

The International Conference on Mental Prophylaxis and Mental Hygiene was held in Paris, at the Hôpital Henri Rousselle, under the chairmanship of Mr. Justin Godart, senator, and former minister of health. A large number of medical psychiatrists had responded to the appeal of the committee on organization presided over by Dr. Toulouse, medical director of the Hôpital Psychiâtrique Henri-Rousselle, and president of the Ligue nationale d'hygiène mentale. Thirty countries were represented: Argentina, Austria, Belgium, Brazil, Bulgaria, Cuba, Czechoslovakia, Denmark, Esthonia, Finland, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland, Turkey, Union of Socialist Soviet Republics, Uruguay and Yugoslavia. French representation included members of parliament, members of the municipal and general councils, high officials, and delegates of large welfare societies, all of which had joined with the scientists and the eminent practitioners enrolled at the congress: medicolegalists, alienists, neurologists, psychiatrists, psychoanalysts, psychotechnicians. After the opening address, delivered by Mr. Justin Godart, the paper of Professor Rudin on mental eugenics and mental prophylaxis was taken up. Several communications followed, notably those of Dr. Bufe, on the familial aid given the insane; of Dr. Placzek, on the prophylaxis of suicide, and of Dr. José Germain, on the new organization of psychiatry in Spain. The second day, the paper of Toulouse, Dupouy and Courtois, on "open" services for psychopaths, was considered. This paper was based on important information furnished by twenty-one countries, notably Germany, the United States, England, Brazil, Norway, Sweden and Czechoslovakia. It traced the history of the psychiatric movement in France, from the seventeenth century up to the creation of the center of mental prophylaxis of the department of the Seine. The afternoon was devoted to the presentation and discussion of the paper of Mr. Bersot on the unification of psychiatric statistics. The international conference closed with a visit to the departments of the Hôpital Henri Rousselle. In the evening, at the Sorbonne, Geheimrat Dr. Robert Sommer of Giessen gave (in German) an address, with projections, on the "Hereditary Characteristics of Goethe."

Discussion on the Nature of Beriberi

An exhaustive discussion on the nature of beriberi developed recently before the Société de médecine et d'hygiène tropicales. Mr. Placidi reported the observations in two epidemics of beriberi that occurred during his stay in the New Hebrides. In explanation of these two epidemics, it was difficult to assume an avitaminosis, for the workmen had in their diet a regular allowance of vegetables and fruits. Polished rice does not appear to have been the cause. The only etiology that seems tenable is infection. It is probable that groups coming from Asia introduced an infectious element in a milieu of overworked laborers living under deplorable hygienic conditions, in a hot and moist climate. These facts speak in favor of the infectious theory held by Noël Bernard. Further, Mr. P. Decourt observed in Paris, at the Hôpital Saint-Antoine, three cases of beriberi in Chinese who had lived in Paris for at least six months, which excluded all possibility of an epidemic. These Chinese had continued to confine their diet to tea, sugar and decorticated white rice. On the other hand Mr. Pons, in the epidemics of beriberi that he observed in Indo-China, never noted cases of contagion. It appears to him that beriberi is due to a disequilibrium in alimentation between the protein and the mineral elements. A common error consists in confusing the polyneuritic syndrome and the disease itself. In reality, the polyneuritic syndrome is a complication of beriberi under the influence of a secondary cause. In many cases its cause is a contagious and epidemic infection, which gives to the polyneuritis observed in connection with beriberi a contagious aspect. Mr. Tanon distinguishes, in agreement with Funck, two forms of beriberi, just as one distinguishes two forms of pellagra, one due to avitaminosis and the other to intoxication. He recalled the researches carried out by Trabaud, Mornched, Klata, Mouharrami and Chewket Pasha, on this last subject. Mr. Pons, who has studied the question carefully, says that it is possible for the two processes to be combined. In that case, the asthenogenic bacillus of Mr. Bernard would develop on a disturbed terrane and would complete by intoxication the symptomatology of beriberi.

International Congress on Biliary Lithiasis

The Congrès international de la lithiase biliaire, which will meet at Vichy, September 19, has adopted as its program the study of the following three topics: (1) the sequels of cholecystectomy; (2) the medical and hydromineral treatment of the gallbladder in biliary lithiasis, and (3) the lithiasic liver. The chief objective of the discussion will be the actual origin of biliary calculi, which has long been ascribed to an infection, whereas many observations show today that calculi may develop without the existence of an infection, and that they may arise not only in the bladder but also in the biliary canaliculi and even in the liver. These conceptions tend to destroy confidence in cholecystectomy, which surgeons perform extensively and as an early intervention, although often it does not prevent the continuation of the formation of calculi. The congress at Vichy, which will apparently be largely attended, is likely to result in some important discussions.

BERLIN

(From Our Regular Correspondent)

July 4, 1932.

A Superfluity of Scientific Societies

Like many other countries, Germany is suffering from a superfluity of scientific societies and scientific sessions. Many of the proposed sessions have been postponed because of the economic depression. But the number of special societies, following the limitations of the specialties, and also the boundaries of the provinces and other geographic systems, has not been reduced. Therefore, one of the oldest scientific societies in existence, the Gesellschaft Deutscher Naturforscher und Aerzte, has suggested the idea of forming a league of the German scientific and medical societies, the purpose being to rationalize the many scientific meetings announced in spite of the depression and to eliminate if possible the unpleasant irregularities of a temporal and material sort that seem constantly to arise under present conditions. In the second half of the year 1931, forced by the economic conditions, which affected physicians severely, a reduction in the number of congresses, sessions and meetings was sought (as was mentioned at the time in these letters); but this year there seems to be a tendency to accept conditions as they are and to adapt oneself to them in a most surprising manner. The economic depression has not lifted, and yet one finds few instances in which there has been a disposition to take account of these conditions by canceling or postponing or combining of previously announced sessions. And the attendance at these sessions, while not what it used to be, is still good. It must be, therefore, that there is an intensive "endogenous" desire or longing for a mutual exchange of ideas and for the instruction that results from such gatherings, so that the optimism of those who will not listen to a reduction in the number of congresses appears to prevail. While such enthusiasm is encouraging, a certain measure of restriction is nevertheless in order, and the action of the Gesellschaft Deutscher Naturforscher and Aerzte is praiseworthy. The constitutional assembly of the proposed league will be held this year at Wiesbaden-Mainz, in connection with the regular sessions of the society.

Relative Incidence of Sickness Among Men and Women

The results of comprehensive statistics on the relative incidence of sickness among men and women have been recently published by the federal bureau of statistics. The statistics cover the reports of 935 federally approved *krankenkassen,* with 2,500,000 insured members, on the number of cases of sickness and the number of days of illness occurring in the various age groups of the members, separated as to men and women, for the year 1930. There were 740,000 cases of sickness among the men and 359,000 cases among the women members, or 45.8 cases per hundred men and 40.7 cases per hundred women. In all age groups the incidence of sickness among the women was less than among the men. Both sexes presented the highest incidence of sickness between the ages 20 and 24 and between the ages 25 and 34. In the women, however, the incidence of sickness in these years, the principal years of childbirth, was 8.8 per cent above the general average, and in the men only 4.4 per cent. The cases of sickness among the women, after the height was reached in the age groups 20-24, declined rather steadily but with an interruption in the climacteric period between the ages 50 and 55. The men showed, however, between the ages 50 and 65, considerable increase in the incidence of sickness. A comparison of the records of men and women shows that in the younger age groups the amount of sickness is somewhat higher among the women than that in the older age groups, but from age 35 on it is unquestionably higher among the men. If allowance is made for the cases of sickness due to peculiar female functions, the danger from sickness, so far as sickness that renders the worker unfit to carry on is concerned, is much less among women than among men. Thus, on the whole, women are more frequently ill during the younger years and the men during the older years.

Psychopathic Aid Center

At a recent session of the Psychotherapeutische Gesellschaft, associated with several leagues of municipal welfare physicians, the city physician Dr. Röder, of the Berlin district Treptow, reported on the observations that had been made in the "open" psychopathic aid center founded seven years previously. The center comprises at present 422 persons, 14 of whom are children under 6 years of age, 331 school children and 77 juveniles. The treatment they receive consists only in the giving of suitable advice to the children. When they are improved, these children are promptly dismissed from the center, in order not to awaken in them the consciousness of being ill and not to make hypochondriacs of them. Of the genuinely psychopathic children, 44 per cent present serious mental defects. The child's family must be instructed as to his condition and as to how he should be treated. The child requires the application of special educational principles that necessitate a great amount of time, understanding and patience, although the excellent results secured amply repay such expenditure. Since the official personnel has been reduced to the lowest limits, it cannot carry out such treatment with the required detail, and it becomes necessary to enlist the services of trained volunteers, who work under the supervision of the directing specialists and have added greatly to the success of this type of aid. About 6 per cent of the children may be classified under the most severe stage. It is strange that there are only fourteen children under 6 years of age at the center, when it is recalled that, according to scientific opinion, the origins of the pathologic condition extend back to earliest childhood. Therefore, for several months past, *all children 3 years of age are examined as to possible* mental defects, and all observations are reported to the center. If such an examination is made from year to year, and, in addition, the school health officers continue to watch for irregularities, it is impossible for a mentally defective child to escape detection for any length of time.

Administrative Technic in the Smaller Hospitals

The Berliner Dozenten-Vereinigung (association of university teachers) is planning, in collaboration with the Verwaltungs-Akademie Berlin, to organize, the coming fall, a course for physicians on the administrative technic of smaller hospitals. This course is intended mainly for the medical directors of the smaller hospitals and sanatoriums that have no separate administrator, the administrative duties lying entirely in the hands of the directing physician. Lectures will doubtless be provided on the hospital as an educational and postgraduate center; on the collection of funds for the administration of the hospital, with especial reference to the present economic depression; on the economic management of the hospital, and on the functioning and management of the financial department. Questions pertaining to personnel constitute an important part of the problem as a whole. Great importance is attached further to suggestions as to simplification of the business management, also on the situation of the nurses in the hospital, the question of the supplying of medicaments, the legal status of the hospital, the special equipment; and, finally, the important field of the relations of the physician to the patient, so far as legal questions are involved, will be discussed. This plan of holding such a four to five day course is deserving of general support.

Relation of Sick Benefit Associations to the Hospitals

As is well known, Germany has a system of social insurance that is extensively developed—in fact, in the opinion of many, it is developed far beyond the endurable limits. This opinion is shared not only by physicians and medical organizations but also by wide sections of the population, including employers and employees. The advantages of the sick benefit associations for the uplift of the poorer sections of the population is unquestioned. A detailed discussion of this phase of the problem is reserved until such time as the new provisions of the law pertaining to *krankenkasse* physicians, which is now in process of revision, have been published and subjected to careful scrutiny. For the present, attention is called to a single circumstance that shows the trend of events: between the federal league of private hospitals and care-taking institutions of Germany, the merger of the communal league for the promotion of public health and the leagues of the *krankenkassen*, an agreement has been reached that concedes to the *krankenkassen* a certain right of supervision over the hospitals. Thereby the duty of hospitals to give information concerning members of *krankenkassen* who are undergoing treatment is recognized, and, in some cases, the confidential physician of the *krankenkassen* is permitted to be present at the examination of the patient. This second demand can, to be sure, be refused by the attending physician; but, in that case, a third physician may be called in, at the expense of the *krankenkassen*, the parties concerned agreeing on the physician to be selected. Complaints of the *krankenkassen* about too long sojourns in the hospital are inquired into by the competent league of the syndicate. These are questions of prestige and finance that have to be settled. It is admitted, however, that the position of social insurance and of the *krankenkassen* is at present not just the best. From the medical point of view, this intervention, in spite of the fact that the medical representatives felt compelled to support it, is much to be regretted.

Number of Directing Physicians in Hospitals

According to recent statistics, there were in Germany, as of Jan. 1, 1932, 2,930 directing physicians out of a total of 50,000 physicians. Of these 2,930 directing physicians, 670 were above 60 years of age, while 88 were above 70. The largest number (455) belonged to the 56-60 age groups. There were 110 chief physicians who were licensed since 1923. It was significant that only 15 of these were in the large cities.

Petition by Lay Practitioners for Recognition

The *Deutsches Aerzteblatt*, the organ of the medical profession of Germany, publishes a petition of the Zentralverband der Heilkundigen Deutschlands (central league of lay practitioners of Germany), addressed to the government and legislature of one or more of the *länder* of Germany. The lay practitioners are seeking state recognition. It does not seem likely that their dreams will be realized in the near future; nevertheless it is necessary to take note of such aspirations, and it is quite in order that the petition of this league is printed in full. The petition furnished a shocking insight into the conceptions and the makeup of this organization of lay practitioners. In the Berlin letter of May 30 (The Journal, July 9, p. 145) the number of lay practitioners in Germany during the last two generations was given.

BUDAPEST

(From Our Regular Correspondent)

July 5, 1932.

The Annual Medical Week at Balatonfüred

The Medical Week, which is held annually at Balatonfüred, the picturesque bathing resort on the shore of Lake Balaton, was well attended this year, an unusual number of physicians, in view of the economic situation, being attracted by the interesting program and the entertainment offered by the management.

Prof. E. Neuber read a paper on the causes of complaints following gallstone operations. The cause of the complaints may be sought in the complications that accompany gallstone disease, which can be abolished with the removal of the stones in almost every case. Gallstones rarely recur after their operative removal. It is safe to say that once in a thousand instances postoperative complaints are in close connection with the operation itself; but this does not mean that these postoperative complaints are due to the formation of new stones. Complaints may be caused also by adhesions, which usually are not the result of the operation but are due to the original condition. Such adhesions impede the outflow of bile or, if they are located on the surface of the liver, may be an inconvenience to the respiratory movements.

The most serious postoperative inconvenience may be caused by inflammatory diseases of the gall ducts, which as complications of gallstones cannot be cured simultaneously with the removal of the stones. Most frequently they occur in those cases in which the gallstones have been present for years. In such instances operation alone will not suffice, the patient being obliged to observe a prescribed diet and regimen. If patients follow instructions closely, their complaints will cease shortly and they may follow their old manner of living.

Gallstone disease often goes hand in hand with gastric complaints. After operation the inconveniences caused by the gallstones cease, but the gastric complaints may persist. The complaints most frequently encountered are chiefly secretory disturbances and they present themselves as lack or diminution of acid formation. The question as to how the gastric secretion changes after operations for removing the gallbladder has not been satisfactorily answered. The opinion is that the extirpation of the gallbladder does not considerably influence the secretory action of the gastric glands and therefore the removal of the gallbladder does not mean any great harm to the organism. The gastric complaints can be relieved by the prescription of drugs.

Postoperative complaints may be provoked also by hernias formed in the operative scar. These complaints, though infrequent, may be similar to those caused by the gallstones, particularly when the hernias contain intestine.

Professor Neuber analyzed postoperative complaints in many cases; searching for their causes, he came to the conclusion that only a small fraction of these can be brought in organic connection with the operation proper. Postoperative complaints teach the value of not delaying long after the diagnosis, particularly if the patient's condition is becoming worse, for with the delay not only is the operation rendered more difficult but the chances of postoperative complaints are increased.

Professor Verebelyi spoke about the importance of precarcinosis, by which term is meant changes, such as anomalies of development, chronic inflammation, granulation, hypertrophy, or tumor-like change, from which sources cancer forms so often as to exceed the percentage of casual coincidence. From the point of view of surgery, such skin changes do not present a problem because they are visible and therefore their change to cancer is noticeable at any time. The question is much more difficult with leukoplakia, which is often a precursor of cancer. The difficulty is still greater in precarcinosis of the internal organs.

Dr. George Bakács read a paper on the hormonal treatment of obesity. He reported two cases showing the results attainable in cases of regional obesity.

Dr. Ludwig von Pap spoke on arthralgia of endocrine origin. He said that endocrine arthralgia has four characteristic manifestations: tumescence, pain, rigidity and weakness.

ITALY

(From Our Regular Correspondent)

May 31, 1932.

Propaganda to Promote Consumption of Rice

Many Italian physicians are supporting a scientific movement for the revaluation of rice as to its alimentary and therapeutic properties. Thus, Professor Devoto of the Clinica del lavoro in Milan, Professor Micheli of the University of Turin and Professor Ferranini of the University of Naples have published articles setting forth the fields of alimentary hygiene in which an extensive use of rice, of which they give the physiologic and therapeutic characteristics, is indicated. In the Ospedale Maggiore at Vercelli, a series of scientific lectures on the subject was held. At this conference, Professor Rigobelli spoke on the relations between vitamins and ferments in general and in deficiency diseases, and with especial reference to the vitamins and the ferments of rice. Professor Issoglio discussed the biologic aspects of phosphorus, with especial reference to alimentation. Professor Camelli dealt with the possibility of replacing ordinary flours with corresponding preparations of rice in the alimentation of infants receiving an artificial diet.

The Appointment of Prof. Giunio Salvi

Prof. Giunio Salvi, who holds the chair of normal human anatomy, has been chosen rector of the University of Naples. Having entered young on a university career, he won by competitive examination, in 1901, a chair at Sassari, whence, in 1909, he removed to Parma, and, in 1919, after having served in the war as a medical officer, he accepted a chair at the University of Naples. His studies on the morphology of the blood vessels and the muscles and his embryologic research on the development of the intestine are well known. A method of craniocerebral topography which he studied for years and which was completed recently with radiologic research bears the name of Professor Salvi; it ranks high along with the best foreign treatises on the subject. Professor Salvi is the author also of a treatise on descriptive anatomy and of another on topographic anatomy.

Notification of Birth of Deformed Infants

The head of the government has presented to the senate the draft of a law pertaining to compulsory notification of the birth of deformed infants, including lesions of a permanent nature observed in the new-born that have caused or that may cause a partial or total incapacity for work. If this law as drafted is adopted, it will be incumbent on all physicians and midwives to notify the communal and the health authorities whenever they observe the birth of a deformed child.

VIENNA

(From Our Regular Correspondent)

June 15, 1932.

Blood Transfusion in Sepsis

In a series of addresses before the Vienna Medizinisches Doktoren Collegium, Prof. Dr. Falta discussed the problem of blood transfusion in sepsis. The indications for this intervention have been extended in recent years. In two classes of disease, blood transfusion has been found to be especially valuable: (1) in the various forms of anemia and (2) in infectious diseases. To the first group belong anemia resulting from hemorrhages due to injuries, childbirth, ulcers, shock, anemia associated with chronic hemorrhages (as in hemorrhoids, hemophilia, hemorrhagic diathesis), and the secondary anemias associated with disturbances of nutrition and intoxications, pernicious anemia and conditions attending hemolytic icterus. The second large group comprises the infectious diseases and septic conditions. The effects of blood transfusion in these various diseases are not uniform. In the case of severe hemorrhage, transfusion constitutes "substitution therapy," since the freshly introduced blood takes over the function of that which was lost. In addition, the transfusion constitutes a stimulation of the hematopoietic areas. Only a few hours after the intervention, reticulocytes appear in the blood. In infectious diseases and in sepsis, transfusion promotes not only the new production of blood corpuscles but also the formation of immune bodies in the reticulo-endothelial system. In severe cases of sepsis, this is especially important, because here the whole system is flooded or "blocked" by bacteria and may be seriously damaged by the endotoxins. Thereby its phagocytic and immunizing activity is impaired. The intake of healthy, bacteria-free blood cleanses, so to speak, the reticulo-endothelial system and thus restores its function. In cases in which no benefit appears to be derived from a simple transfusion, one can resort to a peculiar intervention. One can have the donor develop immune bodies. With the bacterial strain derived from the sepsis patient, a vaccine is prepared and with this vaccine the donor is immunized, and then the blood of the donor thus laden with immune bodies is transfused. In Vienna, the direct method of blood transfusion is the one most commonly employed. The citrate method is being discarded more and more. In case it is desired to use a vaccinated donor several times, one must not take at one time more than about 250 cc., otherwise the donor may suffer injury.

Decline in Tuberculosis Mortality in Vienna

The decline in the mortality of tuberculosis is a fact in all civilized countries. The downward trend has been observed for about forty years, but the rate of the decline has varied with the cultural level of each country. The years 1914-1918 brought, however, a reversal, which has affected two decades. But, in 1920, an improvement in conditions was again noticed, and the change was so rapid that in 1922 the level of 1913 was attained. The decline in tuberculosis mortality was now more rapid than the increase during the war period. The decline has been constant since 1922. Neither the epidemiologists nor the statisticians foresaw such a rapid decline; nor have they been able to give a satisfactory explanation of it. One thing, however, has been established—namely, that tuberculosis is more frequent, the poorer the population of a given area is. Tuberculosis declines as prosperity increases. Prosperity results in less overwork, better homes, better food, more recreation, better protection against colds and infections, and better care during illness and convalescence. But all these factors do not suffice to explain the sharp decline in the frequency of tuberculosis. Not all age groups show a like reduction of mortality. In an article recently published by Dr. S. Peller in the *Arbeiterschutz* will be found some instructive figures on the subject. The mortality for Vienna has been carefully studied, and it has been noted that the age groups above 60 do not ordinarily show much improvement—among either the women or the men. The figures in these groups remain more or less constant:

Deaths from Tuberculosis in Various Age Groups per 10,000 Deaths in General

	Men				Women			
Age Group	1913	1920	1923	1929	1913	1920	1923	1929
0 -1	69	88	..	31	51	60	47	34
1- 5	47	68	30	24	45	66	26	25
15-30	22	34	22	11	27	40	27	21
30-40	41	43	28	25	28	31	18	11
60-70	50	74	56	32	31	58	25	16
Above 70	47	60	77	47	31	69	38	31

It will be observed that among women of the 15-30 age groups there are more deaths than among the men; therefore, women require special protection during this period. This is also taken account of in social legislation. Further, the pregnant worker is protected by lengthening of the "protected period," without loss of wages. It appears that now tuberculosis claims fewer victims belonging to the 30-60 age groups than formerly. Dr. Peller makes a demand that social legislation and prophylactic medicine shall endeavor to aid the age groups that are at present particularly menaced—namely, the women aged 15 to 30—in the struggle against tuberculosis, in order that also these age groups may be brought within the constantly declining curve of mortality. The prevailing low economic level of industrial conditions, which have characterized the past two years or more, will doubtless bring a reversal in the heretofore favorable development.

RIO DE JANEIRO

(From Our Regular Correspondent)

June 15, 1932.

Nephrolithiasis

Dr. R. Josetti recently reported before the Academia Nacional de Medicina of Rio de Janeiro a case of silent giant calculus of the kidney. He took occasion to discuss the indications and contraindications for operation in renal calculi, dividing the entire group of calculi of the kidney into four subgroups. The first subgroup comprises the type of silent benign calculi, which occurs frequently. Operation in cases of this type is not indicated since the patients do not suffer in any way and the presence of calculi is found only through roentgenologic examination. The second subgroup comprises calculi which produce such grave symptoms as colic, hematuria or pyuria and sometimes even endanger the life of the patient, from complications, such as acute anuria or generalized septicemia originating in the infectious pyelitic focus. In this type operation is always indicated. The third subgroup is represented by certain cases in which, in spite of grave symptoms, operation is contraindicated because of renal insufficiency, the general condition of the patient, or the presence of complications such as diabetes, tuberculosis, cancer, cardiorenal sclerosis or similar conditions. In these cases a functional test of the kidney reveals that the elimination of phenolsulphonphthalein is poor. The most simple operation in these cases, even a pyelotomy, may endanger the patient. The fourth subgroup comprises certain cases belonging either to the benign or to the malignant forms in which operation should be carefully considered from the very beginning until a decision is reached.

Disseminated Leukoderma in Secondary Syphilis

Dr. J. Ramos e Silva, head of the Department of Dermatology of the Policlinica Geral of Rio de Janeiro, recently reported a case of disseminated leukoderma in secondary syphilis. The patient, aged 18, in whom the presence of secondary syphilis was proved by the appearance of hypertrophic mucous plaques in the vulva and by a positive Wassermann reaction, presented round, achromic maculae, about 1 mg. in size, without hyperchromic edges and with a central area of normal pigmentation, disseminated on the skin. Under treatment with bismuth compounds this dermatosis had a slow regression until it completely disappeared. This type of dermatosis may be considered as leukoderma of syphilitic origin which probably followed the development of a benign syphilitic roseola that passed unobserved and was due to the action of spirochetal toxins together with influences of other pathogenic processes on the cells of the stratum germinativum epidermidis.

"Rickettsia Brasiliensis" in Exanthematous Typhus

Dr. J. Lemos Monteiro read a paper, recently, before the Academia Nacional de Medicina of Rio de Janeiro, on the results of his experiments to ascertain the etiologic relationship of Rickettsia brasiliensis with the exanthematic typhus of São Paulo. He studied the infectiousness of the organism and its antigenic power in experimental infections and concluded that Rickettsia brasiliensis, which has been frequently isolated in the exanthematic typhus of São Paulo, represents either the etiologic agent or one of the phases of the virus of this type of typhus. After the inoculation of the virus into the peritoneum of the guinea-pig, the Rickettsia bodies may be identified from the mesothelial cells of the peritoneal walls. Rickettsia isolated from the peritoneum of the guinea-pig, has pathogenic properties which enable the organism to bring about characteristic experimental infection when freed from the virus through lavage and centrifugation. By means of a vaccine prepared from Rickettsia, isolated from the peritoneum of the guinea-pig and freed from the virus, active immunization may be given to the guinea-pigs, and when the vaccine is given to animals already immunized it provokes the formation of antibodies.

BELGIUM

(From Our Regular Correspondent)

July 6, 1932.

The Fogs of the Meuse Valley

Recent bulletins of the Academy of Medicine of Belgium contain the results of research undertaken for the purpose of identifying the causes of the fatal accidents occurring in the Meuse Valley during the fog of December, 1930. In addition to the tracheobronchopulmonary irritation that all the patients manifested, a large number showed signs of laryngeal irritation with modification of the tone of the voice; others manifested signs of nausea, and in some instances vomiting. There were no diarrhea, no neuritis or albuminuria, and no sensory disorders. The necropsies showed no evidence of recent structural changes in the viscera, particularly on the part of the liver and the kidneys, organs frequently attacked by diffuse massive intoxications. One can only point out the presence in the pulmonary alveoli of fine black granulations that did not give the microchemical reactions of iron, either free in the alveolar cavities or engulfed by the polymorphonuclear leukocytes. The spectroscopic analyses of the blood were negative for methemoglobin, sulphemoglobin and sulphmethemoglobin. The toxicologic tests were likewise negative, which does not exclude the intervention of a toxic substance in the fogs. It may be assumed that the toxin had not penetrated the blood and the viscera in sufficient quantity to be detected.

From the first to the fifth of December, 1930, the meteorological situation in Belgium was characterized by high atmospheric pressures and light easterly winds. This situation favored the mixture of harmful products, gases and impurities of all kinds, derived from the smoke of industrial factories and others. There were in the layers of air next to the ground extremely minute particles, solid or liquid, measuring from 1 to 5 microns, moving at a slow speed, which made them more easily respirable.

As no samples of air were taken during the fogs that occurred between December 1 and 5, the members of the commission of inquiry paid a visit to the various factories of the surrounding country and prepared a list of thirty substances that might have been thrown into the air. What substances are most likely to have caused the symptoms observed? One can eliminate carbon dioxide, carbon monoxide, hydrogen, hydrogen sulphide, arsine, acetylene, hydrocarbons, particles of tar, and phenol. One may retain ammonia and the ammoniacal vapors, the nitrous and nitric vapors, sulphur trioxide and its oxidation products, hydrofluoric acid, hydrochloric acid, alkaline fluorides, possibly the dusts of zinc oxide, iron oxide, lime, cement and soot, together with all the dusts of metals. To sum up, it appears that one of the following substances must be incriminated: sulphur trioxide and its oxidation products, hydrofluoric acid, nitrous vapors, ammoniacal vapors, and hydrochloric acid.

Arguments have been adduced to incriminate sulphurated substances, in the form either of sulphur dioxide or of sulphuric acid. All or part of the sulphur dioxide was adsorbed by the particles of soot coming from the factory chimneys, which explains why it required nearly three days for these to be deposited on the ground, and also the increase of harmful products the third day of the fog. This explanation is the only one that appears to be in complete accord with the medical, toxicological, meteorological and chemical observations, and to which no serious objections have been raised.

The problem of pollution of the atmosphere is of great importance, therefore, and suitable preventive measures should be adopted to guard against a repetition of similar catastrophes.

Marriages

William B. Brock, Oakville, Iowa, to Mrs. Enid Joan Sprinkle of Kansas City, at Blue Springs, Mo., June 5.

George Shorkley, Mount Vernon, Wash., to Miss Sara Merriman Dyer of Boulton, Mass., June 6.

George Stuart Enfield, Bedford, Pa., to Miss Rowena Ewing Allmond of Los Angeles, June 19.

Emil O. Muhs, Vermilion, S. D., to Miss Marie M. Buettner of Burlington, Iowa, June 15.

Rusl Parker Noble, Norway, Iowa, to Miss Louise Ada Watson of Cedar Rapids, June 4.

John Jairus Bernhard, Allentown, Pa., to Miss Hilda Susan Miller of Bangor, June 11.

Margaret A. Telfer, Bloomington, Ind., to Mr. A. M. Owen of Evansville, in June.

Russell J. Spivey, Thorntown, Ind., to Miss Dorothy Margaret Ryker, recently.

Thomas Parke, Philadelphia, to Miss Caroline Lippincott Hoopes of Paoli, June 18.

Austin W. Holman to Mrs. Harriett Tullis, both of Circleville, Ohio, recently.

Matthew J. Severin, Omaha, to Miss Irene Stafford of Bancroft, Neb., May 17.

Earl H. De Shaw, Monticello, Iowa, to Miss Selma Prahm of Wyoming, June 11.

Ronald L. Jardine, Williamsport, Pa., to Mrs. Anne W. Mitchell, May 21.

Clifford C. Taylor, Thorntown, Ind., to Miss Marjorie Kes, recently.

Deaths

Edward Carrington Stanard Taliaferro ⊕ Norfolk, Va.; Medical College of Virginia, Richmond, 1898; member of the House of Delegates of the American Medical Association, 1925, 1927, 1930 and 1931; fellow of the American College of Surgeons; past president of the Medical Society of Virginia and the Norfolk County Medical Society; captain in the medical corps of the State Militia for eight years; gynecologist to the Memorial Hospital, the Hospital of St. Vincent De Paul and the Norfolk Protestant Hospital; aged 57; died, July 28, of complications following an operation for appendicitis.

William Alfred Kickland ⊕ Fort Collins, Colo.; University of Michigan Medical School, Ann Arbor, 1895; past president of the Colorado State Medical Society; fellow of the American College of Surgeons; served during the World War; surgeon to the Bartz Memorial Hospital, Windsor; aged 64; died, in July, at St. Joseph's Hospital, Denver, of septicemia.

Hugh Karr Davis, Sonestown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the Medical Society of the State of Pennsylvania; formerly county coroner; on the staff of the Muncy (Pa.) Private Hospital; aged 45; died, June 21, at the Robert Packer Hospital, Sayre, of malignant hypertension and subacute nephritis.

Charles L. Tucker, Griffin, Ga.; Southern Medical College, Atlanta, 1892; member of the Medical Association of Georgia; past president of the Spalding County Medical Society; aged 61; died, June 29, at the R. F. Strickland and Son Memorial Hospital, of carbolic acid poisoning, self-administered.

Edward Gove Randall, Waterville, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1898; served during the World War; member of the board of education, and for many years health officer; formerly on the staff of the Utica (N. Y.) Memorial Hospital; aged 60; died, July 4, of arthritis.

Henry Embry McMurray, Tampa, Fla.; North Carolina Medical College, Charlotte, 1908; Tulane University of Louisiana School of Medicine, New Orleans, 1913; member of the Florida Medical Association; on the staffs of the Children's Home, and the Tampa Municipal Hospital; aged 50; died, July 4.

Christopher Balthus Preston, Ashland, Ky.; College of Physicians and Surgeons, Baltimore, 1907; past president of the Boyd County Medical Society; formerly on the staff of the King's Daughters' Hospital; aged 50; died, June 2, in a hospital at Charleston, W. Va., of carcinoma of the pancreas.

Woodard Davis Beacham, Hattiesburg, Miss.; Medical Department of the University of Louisiana, New Orleans, 1899; member of the Mississippi State Medical Association; for nine years health officer of Forrest County; aged 57; died, June 23, of heart disease and pneumonia.

Sidney Stetson Carruth, Boston; University of Vermont College of Medicine, Burlington, 1893; member of the Massachusetts Medical Society; aged 61; died in June at the Peter Bent Brigham Hospital, of chronic myocarditis, cerebral hemorrhage and bronchopneumonia.

Roy Ennis Wolfe ⊕ Rocky Ford, Colo.; Chicago Homeopathic Medical College, 1901; past president of the Otero County Medical Society; aged 54; died, July 4, in the Physicians' Hospital, of streptomeningitis following an infection of the middle ear.

Mary Elizabeth Hanks ⊕ Chicago; Boston University School of Medicine, 1897; past president of the Chicago Council of Medical Women; member of the Radiological Society of North America; aged 70; died, July 17, of myocarditis and angina pectoris.

William Wilson, Akron, Ohio; Cleveland Homeopathic Medical College, 1899; Pulte Medical College, Homeopathic, Cincinnati, 1900; member of the Ohio State Medical Association; aged 71; died, June 2, in the City Hospital, of coronary thrombosis.

Guerdon Conde Buck ⊕ Platteville, Wis.; Cornell University Medical College, New York, 1900; past president of the Grant County Medical Society; physician in charge of a hospital bearing his name; aged 58; died, June 20, of heart disease.

Arthur Peter Smyth, Youngstown, Ohio; University and Bellevue Hospital Medical College, 1907; member of the Ohio State Medical Association; for many years on the staff of St. Elizabeth's Hospital; aged 49; died, July 10, of carcinoma.

Charles B. Kibler, Corry, Pa.; University of Buffalo School of Medicine, 1870; member of the Medical Society of the State of Pennsylvania; formerly on the staff of the Corry Hospital; aged 74; died, May 6, of hypostatic pneumonia.

Charles Haskins Reagan, Beeville, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1892; member of the State Medical Association of Texas; aged 69; died in June, of myocarditis.

George Edwin Bush, Geneseo, Kan.; College of Physicians and Surgeons, Baltimore, 1888; member of the Kansas Medical Society; aged 67; died, June 21, in the Ellsworth (Kan.) Hospital, of strangulated umbilical hernia.

Lawrence Letton Smith, Bethel, Mo.; Barnes Medical College, St. Louis, 1899; member of the Missouri State Medical Association; formerly bank president; aged 64; died suddenly, July 4, of cerebral hemorrhage.

Frederick Chester Chadwick, San Francisco; Cooper Medical College, San Francisco, 1904; aged 59; died, May 24, in the Franklin Hospital, of chronic interstitial nephritis, endocarditis and hypostatic pneumonia.

James Wilson ⊕ Wabash, Ind.; Bellevue Hospital Medical College, New York, 1890; veteran of the Spanish-American War; formerly mayor of Wabash; aged 66; was found dead in bed, July 1, of heart disease.

John Patrick Wright, New York; University of the City of New York Medical Department, 1893; aged 69; died, May 24, in the Los Angeles County (Calif.) General Hospital, of arteriosclerosis and myocarditis.

Benjamin Meyers Yost, Linden, Pa.; Jefferson Medical College of Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 81; died, April 20, of chronic endocarditis and myocarditis.

Henry Hubbard Peachey, New York; Medical College of Ohio, Cincinnati, 1889; aged 63; died, July 19, at the home of his sister in Cincinnati, of arteriosclerosis, diabetes mellitus and dilatation of the heart.

John M. McCully, Clarence, Mo.; St. Louis Medical College, 1873; for twelve years member of the school board of Shelbina; aged 81; died, June 16, in a hospital at Shelbina, of prostatitis and cystitis.

Henry Harrison Merriman, Applegate, Mich.; Kentucky School of Medicine, Louisville, 1894; served during the World War; aged 67; was found dead, July 2, in his garage, of carbon monoxide poisoning.

Walter Cox Alexander, New York; Georgetown University School of Medicine, Washington, D. C., 1930; aged 25; intern, St. Vincent's Hospital, where he died, June 16, of ulcerative colitis.

George Harvey Morrison ⊕ Whitefield, N. H.; Hahnemann Medical College of Philadelphia, 1881; medical superintendent of the Morrison Hospital; aged 77; died, May 27, of hematemesis.

Daniel Baldwin Wylie, Salinas, Calif.; College of Physicians and Surgeons, Chicago, 1888; member of the California Medical Association; aged 70; died, May 21, of a self inflicted bullet wound.

David V. Reinoehl ⊕ Erie, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; on the staff of St. Vincent's Hospital; aged 59; died, June 16, of cerebral hemorrhage.

Charles John Richards, Tonopah, Nev.; M.R.C.S., and L.R.C.P., London, 1891; College of Physicians and Surgeons of San Francisco, 1906; aged 62; died, May 15, of senile dementia.

John Henry Byrne, Evanston, Ill.; Rush Medical College, Chicago, 1874; aged 91; died, June 23, in the Psychopathic Hospital, Chicago, of senile dementia and chronic myocarditis.

Clinton E. Spicer, Long Beach, Calif.; Rush Medical College, Chicago, 1903; past president of the North Dakota State Medical Association; aged 62; died, July 1, of pulmonary edema.

George G. Melvin, Fredericton, N. B., Canada; Bellevue Hospital Medical College, 1887; chief medical health officer; aged 71; died, May 12, in Oakland, Calif.

Jay Thomas Wood, Springfield, Ill.; College of Physicians and Surgeons, Chicago, 1907; served during the World War; aged 48; died, June 11.

Thomas Lee Van Giesen, Watsonville, Calif.; University of Pittsburgh School of Medicine, 1896; aged 56; died, July 11, of endarteritis obliterans.

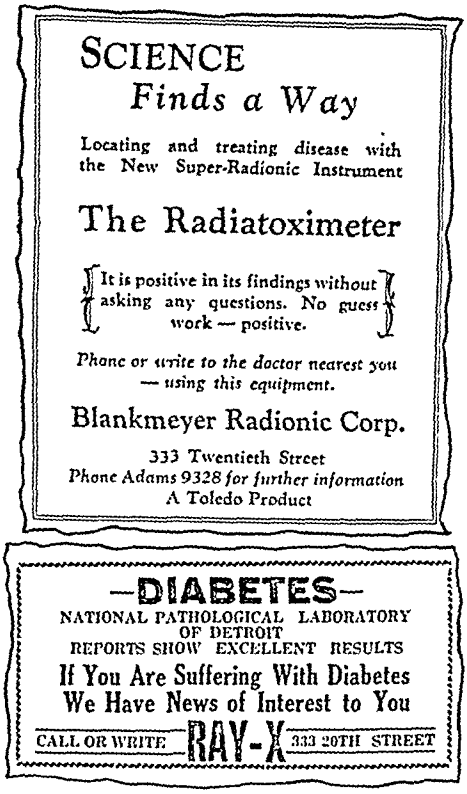
James M. Sanders, Eckerty, Ind. (licensed, Indiana, 1904); aged 82; died, June 26, of heart disease.

Bureau of Investigation

"RAY-X WATER—LIQUID SUNSHINE"

Another Attempt to Make a "Patent Medicine" Out of Drinking Water

Many people drink too little water. If they could be persuaded to drink more water, their health would be improved and many minor indispositions ameliorated or removed. Quacks, faddists and others are familiar with this fact and capitalize it by putting on the market drinking water that is alleged to have been subjected to some mysterious hocus-pocus that has endowed it with health-giving properties that would have intrigued Ponce de León. Such waters are always sold at a high price and those who purchase them drink them with a regularity and insistence bordering on a religious rite. It is not surprising that many such people, whose liquid intake has previously been below that which it should have been, find their general health improved.



SCIENCE
Finds a Way

Locating and treating disease with the New Super-Radionic Instrument

The Radiatoximeter

It is positive in its findings without asking any questions. No guess work — positive.

Phone or write to the doctor nearest you — using this equipment.

Blankmeyer Radionic Corp.

333 Twentieth Street
Phone Adams 9328 for further information
A Toledo Product

—DIABETES—
NATIONAL PATHOLOGICAL LABORATORY OF DETROIT
REPORTS SHOW EXCELLENT RESULTS
If You Are Suffering With Diabetes
We Have News of Interest to You
CALL OR WRITE RAY-X 333 20TH STREET

Reproductions (reduced) of two advertisements in Toledo papers: One of the "Radiatoximeter" at 333 Twentieth St., Toledo, and one of Ray-X Water, also at 333 Twentieth St., Toledo. The use of the name of the National Pathological Laboratory of Detroit in the lower advertisement was wholly unjustified. Apparently the only possible connection was that Dr. Robert A. Davis had sent some patients with diabetes (or glycosuria) to the laboratory for blood and urinary tests.

One of the latest "patent medicines" of this type is called "Ray-X Water—Liquid Sunshine." The stuff is put out by the Ray-X Water Corporation, 333 Twentieth Street, Toledo, Ohio. The Ray-X Water Corporation is at the same address and has the same telephone number as an outfit known as the Blankmeyer Radionic Corporation, which puts out a fantastic piece of electro-medical hokum called the "Radiatoximeter." This device is described as the "New Super-Radionic Instrument" that *will locate and treat disease without asking any* questions and is positive in its findings!

The Ray-X Water Corporation has for its president one A. R. Hartzog and for its vice president and secretary, E. E. Blankmeyer.

From a report of the Toledo Better Business Bureau, it appears that A. R. Hartzog is Arley R. Hartzog, an unlicensed chiropractor who has been in the courts at various times for violation of the medical practice act of the state. E. E. Blankmeyer, the vice president and secretary of the Ray-X Water Corporation, is reported to be also vice president and secretary of the Blankmeyer Radionic Corporation, a concern which has claimed to have reduced the diagnosis and treatment of disease to a mechanical certainty.

It appears that Hartzog has mailed form-letters to laymen, inviting them to come to a "radionic clinic" for a "free examination." A Mr. I——, who responded to the invitation, reports: He was examined on the "radionic" machine and was told that he had "spinal catarrh," that there were 41 units of poison in his system and that 45 units is all that any one could stand and still live, that he had 12 units of inflammation in his system, that his vitality was down to 69 when it should have been 85, and that he had trouble with his bladder and kidneys! He was then told that if he wanted to take "treatments," it would cost him $4 a "treatment" or $12.50 a week. Being sufficiently impressed he went back, at which time Hartzog placed him in a chair and gave him a "radionic" machine "treatment." Mr. I—— continued to take treatments for seven weeks, paying altogether $87.50. Then, for seven weeks more, he continued to take other treatments by Hartzog, the radionic hokum being alternated with chiropractic treatments. Mr. I—— further declares that during the fourteen weeks, another alleged doctor, also an unlicensed chiropractor, gave him rectal injections and "electric bulb treatments." In closing his report, Mr. I—— says that he has "noted no improvement whatsoever in his physical condition" and that he "feels worse than he did in the beginning"—which is hardly to be wondered at!

During the past six or eight months, the Bureau of Investigation has received a number of inquiries regarding Ray-X Water, of which the following are examples. A Massachusetts physician wrote:

> "Can you tell me anything about a Ray-X Water, being distributed from 333 Twentieth Street, Toledo? A friend has asked me about it and as I have never even heard of it, I am curious to know what, if any, value it may have."

This from a Better Business Bureau in Connecticut:

> "We understand that Ray-X Water, sold by Ray-X Sales Inc., of Toledo, Ohio, are contemplating opening a sales branch locally. Any information that you can give us will be appreciated."

From the social service department of a university in Indiana this inquiry came:

> "An acquaintance of mine has been persuaded to purchase a case of Ray-X Water, to be used in the treatment of diabetes. The usual sales talk has been so convincing to the patient that I am turning to your association as an authoritative body for an opinion in this matter. May I ask whether you are acquainted with this 'Liquid Sunshine'? Has it, to your knowledge, been analyzed? Has there been any action, legal or professional, to prevent the sale of this or to expose the truth in the matter?"

The secretary of the state board of health of a mid-western state wrote:

> "I wonder if you have any information concerning the Ray-X Company of Toledo, Ohio. My attention was directed to this company today through an inquiry from a citizen of this state. This citizen has a daughter, ten years old, with diabetes and now under the care of a physician. Representatives of the Ray-X Company called upon this citizen at his office, told him of the wonderful cures of diabetes effected by Ray-X Water and offered to furnish a sufficient supply of the water for test under an agreement that if the case was not cured, there would be no obligation for payment. He was informed that Ray-X Water is a water highly charged with ultraviolet ray and that it effects a cure by destroying the streptococcus which causes diabetes. This is the first direct contact I have had with this company. From the account given by the citizen, there seems to be all the ear marks of commercialized exploitation. Please advise, giving any information you may have concerning this company."

An Indiana physician has written:

> "Can you furnish me with information regarding Ray-X Water, manufactured by a Doctor Davis in Toledo, Ohio? Are there any curative properties attributed to it? Are there any harmful ingredients in it? Can any harm result in taking it over a period of time? How is it made? Is Doctor Davis in good standing regarding the A. M. A., and in his state and county societies? Is Ray-X water anti-streptococcus, as they claim? An immediate answer would be greatly appreciated."

The only element of medical respectability in the Ray-X Water exploitation seems to be the name of Dr. Robert A. Davis of Highland Park (Detroit), Mich. Doctor Davis has been advertised as "The Head of the Medical Department of the Ray-X Corporation" and testimonials by Doctor Davis are used as part of the advertising come-on.

According to the records, Doctor Davis was born in 1864 and, when he was forty-two years of age, was graduated in medicine by the University of Illinois College of Medicine. He was licensed in Michigan in 1909. He is a member of the Wayne County (Detroit) Medical Society and, through that, has qualified as a Fellow of the American Medical Association.

When the Ray-X Water exploitation was first brought to the attention of the Bureau of Investigation, a letter was written to Doctor Davis, asking him if there were any truth in the claims that had been made, that he had expressed a favorable opinion of this nostrum. In reply, Doctor Davis wrote a long letter detailing certain cases of individuals whom he believed had been benefited or cured by the administration of Ray-XWater. No controls were given and the clinical reports were of such a character that, scientifically, they were worthless. On the question of secrecy of composition of Ray-X Water, Doctor Davis wrote:

> "In your letters, you seem to place special emphasis upon the word 'nostrum.' The word simply means a secret remedy or patent medicine. That definition does not apply to the remedy in question, since I know the method of its manufacture. If the word had a wider meaning and could be defined as a remedy with little or no therapeutic value, then many of the non-secret remedies would come under that heading and could be placed upon the scrap heap where they belong.
>
> "I intend to continue my studies of this remedy. I know positively that it is a new thought in medical therapeutics. When such a mass of evidence can be produced that will prove that the remedy has the merit that I think it has, then the method of its manufacture will be revealed, provided the company who has the right to manufacture it is thoroughly protected. Any ridicule that may be heaped upon me during this investigation will not worry me in the least. I will consider its source. I am thoroughly conscientious in this matter."

From this it will be seen that Doctor Davis admits that he is using Ray-X Water and in addition is also acting as the head of the "Medical Department" for a company that is making money out of the exploitation of this secret preparation and he (Doctor Davis) does not intend that the medical profession or the public shall share this secret until he has accumulated a "mass of evidence" that will prove that the remedy has the merit that he thinks it has.

The only information given in the printed matter regarding the composition of Ray-X is:

> "Ray-X is 100% Pure distilled water subjected to a very powerful series of RAY treatments. These treatments besides making it absolutely free from all impurities; impregnates it with certain properties and retains them in solution."

In another leaflet we read:

> "Its base is 100% pure Water, scientifically known as H_2O. . . . It is subjected to a series of powerful and penetrating Ray treatments."

In answer to a letter written to the Ray-X Water Corporation, asking for information regarding the exact nature of the "rays" to which the water was said to be exposed, this reply came:

> "In the first place, the water is H_2O, absolutely pure. It is treated by a series of light rays and, for this reason, we call it 'Liquid Sunshine.'
>
> "You perhaps know somewhat of the work being done by Dr. Stienbach [sic!] at the University of Wisconsin with food. His method of treating foods for cattle is similar to our treating water for human beings.
>
> "This water is 100 per cent pure, but our treating it as we do brings wonderful relief to those suffering with stomach and bowel troubles and is a wonderful remedy for the elimination of streptococcus infection."

In some of the advertising, one sees the influence of the "radionic" hocus-pocus with which the exploiters of Ray-X Water are so closely tied up. Thus, in describing the action of Ray-X Water, we read:

> "It is an efficient aid in detoxilating and purifying the system, normalizing the organs and *stimulating vibrations.*" [Italics ours.—ED.]

The advertising is of a type common to that of "patent medicines." In spirit it is claimed that the product will cure almost any ill to which the human body may be subject; in letter, however, it is denied that the product has any curative qualities! Thus:

> "We make no claims as to any curative powers in any given case."

Then, the advertising goes on to state that Ray-X has been known, tried and proved over a period of five years, that they have testimonials by the hundreds, that tests are being carried on daily under medical supervision, and that it appears:

Mrs. C. was cured of intestinal tuberculosis following the use of Ray-X Water.

Mrs. H. was cured of chronic arthritis.

Mr. B. was cured of acute arthritis.

Mrs. X was cured of septicemia following childbirth.

Mrs. S. was cured of diabetes.

Mrs. M. was cured of streptococcus infection and anemia.

And so it goes! Some of the more elaborate advertising consists of alleged testimonial letters written by grateful patients. One of these letters purports to be from one John H. Sisson, who wrote that for fourteen years he had been in pain and agony and had been to various hospitals, such as the Walter Reed General Hospital, the Waukesha General Hospital, the Dayton Military Home and the Marine Hospital, and that he had been examined by about seventy-five doctors. Then, after all these authorities had told Mr. Sisson that nothing could be done, he saw an advertisement in the Toledo *Blade* of the "Radiatoximeter," made by the Blankmeyer Radionic Corporation of Toledo. Mr. Sisson then had his complicated case analyzed by this "super-radionic instrument," which is positive in its findings and asks no questions, and the suggestion was made that he use Ray-X Water. Then, as he states in his letter, although he had suffered pain and agony for years, had lost the use of his arms and legs and was also going blind, after using Ray-X for a month he was free from pain and suffering and felt a hundred per cent better!

This would indicate a very pretty tie-up. A man suffering from some chronic condition is persuaded through a newspaper advertisement to have his condition diagnosed by a preposterous piece of mechanical quackery known as the Radiatoximeter. He is then passed on to the exploiters of Ray-X Water, who share the offices of the Radiatoximeter outfit.

Correspondence

"ANESTHETICS: THEIR RELATIVE VALUES AND DANGERS"

To the Editor:—In The Journal, June 18, page 2234, appears a review of Dr. Albert H. Miller's "Anesthetics: Their Relative Values and Dangers," in which the author of the essay and the trustees of the Fiske Fund are criticized. This essay fulfils a want; it was compiled from a wide survey of the literature. From the author's large personal and practical experience, weight should be attached to whatever he may write. He has specialized exclusively in anesthesia for over twenty years and is at the present time chief or consulting anesthetist of some of the leading hospitals in Providence. From 1909 to 1925, The Journal published nine of his papers on anesthesia. This monograph can be recommended to any one on account of the large factual material, with over a hundred references to important fundamentals mentioned in the text. His views on the statistics of anesthesia are especially valuable:

> "The simplest method for determining the relative danger from the various anesthetics would seem to be the collection of results from the records of hospitals and municipal bureaus. These statistics, however, are often disappointing. Many of the deaths which occur under anesthesia are never reported in available form. If we could learn the entire list of anesthetic fatalities, we would still lack an accurate estimate of the entire number of administrations. From lack of a standard as to what constitutes death from an anesthetic, comparative statistics of the safety of anesthetics are often misleading. While statistics are subject to the elements of inaccuracy noted, a collection of great numbers of such figures is of value in determining the comparative safety of the anesthetic agents."

Then follow many statistical tables. He remarks on these statistics "in the preceding pages an answer is given to the question of the values and dangers of the anesthetic agents. *The answer will have different interpretations depending on personal experience and training.*" The statement by the critic that "there are approximately 100 ether explosions a year (unreported)" is questionable. Where did the critic get these statistics? Explosions with ethylene should be given prominence because, first, they are avoidable and, secondly, they are most dangerous. Ethylene *has* a rather "foul odor" and for this reason is usually preceded by nitrous oxide to unconsciousness, when ethylene is substituted. The unknown critic seems hurt because the odor of ethylene is called "foul" and ethylene explosions are mentioned. Some hospitals will not allow ethylene to be used for fear of explosions. Personally I would like to see it used in every hospital and by every dentist using general anesthesia, but because I differ with Miller on this point is not a good reason for condemning unqualifiedly an unusually good article on anesthesia.

James T. Gwathmey, M.D., New York.

SODIUM THIOCYANATE (RHODANATE) IN NARCOTIC ADDICTION

To the Editor:—In The Journal, July 2, there appeared on page 56 a communication signed by the Special Narcotic Committee of the Tompkins County Medical Society of Ithaca, N. Y. According to this communication there appears to be little basis for the widely published claims of Prof. Wilder D. Bancroft, of Cornell University, and his colleagues concerning the use of sodium thiocyanate (rhodanate) in narcotic addiction. The writers make no attempts to judge the experimental basis for Bancroft's therapeutic claims, merely stating "that the hypothesis concerning the action of sodium rhodanate on nervous tissue colloids is worthy of consideration and that the drug may have some merit, the members of the medical society would be foolish to deny." In view of the wide publicity which Bancroft's experiments have received and the dangers involved in permitting this publicity to grow, unchallenged, it might be worth while to review briefly the history of this work and to examine critically some of the basic experiments involved.

The use of sodium thiocyanate by Bancroft and his associates in drug addiction and certain forms of insanity is based on experiments of Bancroft and Rutzler (Bancroft, W. D. and Rutzler, J. E., Jr.: The Denaturation of Albumin, *J. Phys. Chem.* **35**:144 [Jan.] 1931) on the heat coagulation of egg albumin. According to their experiments, the coagulation of egg albumin by heat may be reversed by the proper use of this compound. From these experiments, Bancroft argues that since rhodanate reverses protein coagulation and since, according to his results, it is effective in such states as anesthesia, narcotic addiction and certain forms of insanity, these conditions must be due to a coagulation of nervous tissue colloids and the efficacy of this drug as a therapeutic agent due to its power of reversing this coagulation. Since your correspondents cast serious doubts on the therapeutic claims made for this hypothesis, there remains to be critically examined the question of whether sodium thiocyanate actually does reverse protein coagulation. In order to do this most effectively, we must go back to the original experiments with egg albumin.

As starting material for their work on coagulation, Bancroft and Rutzler made use of egg albumin prepared by diluting fresh egg white with distilled water and filtering off the precipitate of so-called globulin. As a final, incontrovertible, proof that sodium rhodanate reverses the heat coagulation of this sample of egg albumin, Bancroft cites an experiment on the precipitin reactions of the unheated and reversed materials which indicates that the two are identical. Concerning the nature of his antigens in these experiments, Bancroft writes: "Although the whole white of an egg was used in this work, there can be no question about whether the globulin was responsible for the precipitation or not. The simple answer to that is that there was no globulin present." Even if it is admitted that this material is free from globulin, which, in the light of recent developments in protein chemistry, is highly questionable, it consists, as demonstrated by many workers and more recently by Hektoen and Cole (Hektoen, Ludvig, and Cole, A. G.: The Proteins of Egg White, *J. Infect. Dis.* **42**:1 [Jan.] 1928) of at least three proteins; viz., ovalbumin, conalbumin and ovomucoid. Of these proteins, the ovomucoid is antigenic and is not coagulated by heat. Aside from the fact that no attempts were made to check the completeness of the coagulation process employed, Bancroft thus overlooked completely the fact that his experimental material contained a protein which is not only antigenic but which undergoes no demonstrable change when heated. In view of the foregoing, the logical interpretation of the precipitin reactions obtained is that they were due, at least in part, to the ovomucoid present. And if it is admitted that this criticism of Bancroft's experimental work is justified, the conclusion follows that he has failed to prove that sodium thiocyanate is capable of reversing the heat coagulation of egg albumin. As further evidence of this failure, the following paragraph from the paper by Bancroft and Rutzler may be quoted: "Since native egg white sols that do not contain too large an amount of the disperse phase stay in suspension at the isoelectric point, the claim is made that to prove the identity of the repeptized protein with the native material, it too should not precipitate when brought slowly to the isoelectric point. Quite obviously the native albumin, which stays up at the isoelectric point, is the abnormal case; whereas the repeptized material which comes down at the isoelectric point acts as it should." It is really too bad that the native egg white doesn't know how to behave properly but the fact still remains that the "reversed" material admittedly differs in at least its physical properties from the original egg white and is, therefore, according to all the principles of protein chemistry, probably different.

There thus seems to be no experimental basis whatever for Bancroft's assertion that sodium thiocyanate is capable of reversing the heat coagulation of proteins. Furthermore, this removes the foundations from beneath his hypothesis that drug addiction, anesthesia and various forms of insanity are due to coagulation of nervous colloids and that sodium thiocyanate, by reversing this coagulation, acts as an effective therapeutic agent in these conditions. In view of these facts, it is not surprising that your correspondents were forced to question the therapeutic claims made for this substance.

Arthur G. Cole, Ph.D., Chicago.
Assistant Professor of Physiological Chemistry,
University of Illinois College of Medicine.

TOXIC HEPATITIS DUE TO CINCHOPHEN

To the Editor:—When one sees five cases of toxic hepatitis due to cinchophen in eight days, and notes the number of medical articles on the subject appearing in the literature, the suggestion is definite that the condition is on the increase, that more care should be taken in prescribing any of the many products in which cinchophen occurs and that some legislative regulation on the sale of them should be enacted.

After the stopping of the drug, it seems generally held that recovery is best accomplished by intravenous dextrose and subcutaneous insulin. In four previous cases so treated, it was noted that none of the patients tolerated intravenous dextrose injections without severe reactions of prostration, two of these cases terminating fatally. It is rather difficult to understand the rationale of this therapy in which one gives dextrose and then oxidizes it, excepting for its sustaining effect. In the last five cases treated and because the pathologic picture resembles that of acute yellow atrophy, this combination was not employed and a liver therapy used instead. All five patients recovered. These cases tolerate liver feedings, the use of the so-called extract, and the intravenous form nicely. The only extra therapy employed was an occasional dose of magnesium sulphate on an empty stomach in the morning, rest in bed, and simple dieting.

I do not deprecate the use of dextrose and insulin, but from good results accomplished in my cases suggest that liver therapy is a worthy addition, and even a substitution. There is no doubt that the symptoms of headache, gastro-intestinal disturbances, jaundice and the prostration were more benefited most distinctly by the liver therapy, regarding which maximum doses are required.

Anthony Bassler, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CULTURE OF TUBERCLE BACILLI

To the Editor:—I should like information on the following:

Löwenstein, E.: *Die Methodik* der *Reinkultur* von Tuberkelbazillen aus dem Blute, Deutsche med. Wchnschr. **56**:1010 (June 13) 1930.
Urbanek, Joseph: Die Beudeutung der Tuberkulose für die entzundlichen Erkrankungen des Uveal Tractus, supp. to *Ztschr. f. Augenh.*, number 12.

I have a letter in which a diagnosis of tuberculosis was made from a blood culture in which in three weeks acid-fast granules were found which were diagnosed as tuberculous granules. Please give me available information as to the work done on this and its reliability.

B. W. Rhamy, M.D., Fort Wayne, Ind.

Answer.—In 1930 and 1931, Loewenstein and his collaborators wrote a number of articles on bacteremia and the cultivation of tubercle bacilli from the blood by a new method devised by Loewenstein, the essential features of the method being that the citrated blood (10 cc.) is hemolyzed by means of 10 cc. of 5 per cent acetic acid and the hemoglobin free (based on the conception that hemoglobin inhibits the growth of tubercle bacilli) residue is planted on an asparagin (based on the conception that peptone inhibits growth while asparagin is favorable to it)-salt mixture-egg and potato flour medium.

They claim a rapid isolation of tubercle bacilli from the blood by this method when other methods, including the guinea-pig, fail. They state that their cultures in many instances differ somewhat from the classic tubercle bacilli. In 1930 Loewenstein and Russeff (*Wien. klin. Wchnsch.* **43**:294 [March 6] 1930) reported three positive blood tests for tubercle bacilli out of eighty cases from Urbaneks eye clinic. Kren and Loewenstein (*Klin. Wchnschr.* **10**:974 [May 23] 1931) report positive results in thirty-one of forty-two cases of tuberculids and thirty-eight of fifty-one of all types of skin tuberculosis. Wessely and Loewenstein (*Beitr. z. Klin. d. Tuberk.* **76**:647, 1931) report 55 per cent positive cultures from forty-seven patients with laryngeal tuberculosis, while Reitter and Loewenstein (*München. med. Wchnschr.* **78**:472 [March 20] 1931) report cultures of tubercle bacilli from the blood in twenty-two of twenty-seven cases of acute polyarthritis. Observers from other communities have not been able to verify the observations with Loewenstein's method. Pollak (*Med. Klin.* **27**:1146 [July 31] 1931) could not verify the high incidence of bacillemia, while Jontofsohn (*Ztschr. f. Tuberk.* **61**:35, 1931) obtained only three positive results from forty-one severe cases of pulmonary tuberculosis and nine cases of surgical tuberculosis. Unverricht and Dosquet (*Ztschr. f. Tuberk.* **63**:338, 1932) obtained only one positive result among ninety-one severe cases of pulmonary tuberculosis, and Ockonomopoulo, Papanikolaou and Joannides (*Ztsch. f. Tuberk.* **63**:340, 1932) obtained no positive cultures from eighteen cases of severe, progressive pulmonary tuberculosis.

The Loewenstein method was submitted to analysis by some American workers, who find that the acetic acid as used in this method is destructive to small numbers of tubercle bacilli but does not efficiently destroy saprophytic acid fast bacilli and that the Loewenstein medium, though efficient, is unnecessarily cumbersome in constituents and mode of preparation. An examination of the blood from 120 far advanced cases of tuberculosis by four different culture methods (including the Loewenstein method) as well as guinea-pig inoculation did not reveal the presence of tubercle bacilli in the blood, and, while the other methods of isolation were able to recover tubercle bacilli from the blood of infected animals, Loewenstein's method frequently failed unless they were there in large numbers.

Loewenstein does not contend that the finding of acid fast granules is sufficient to make a diagnosis of tuberculosis. Acid fast granules (Spengler's fragments) or Much's granules in themselves found in tissues or pus are of no diagnostic value in tuberculosis.

Since such granules may be found in the absence of tuberculosis and in normal tissues, it is generally undisputed now that their presence is of no significance. It is also well to remember that the typical morphology of the tubercle bacillus is essential to making a diagnosis of tuberculosis in regions where other acid fast bacilli do not come into consideration; but these must not be forgotten in the exceptional case and in sites such as the genito-urinary region and the ears, where the acid fast saprophytes can thrive. In smear they cannot be differentiated, but an appropriate culture method or the guinea-pig will differentiate the saprophyte from the pathogen.

MEDICOLEGAL SIGNIFICANCE OF SKIN CHANGES OF CHILD IN WATER

To the Editor:—How long will the body of a full term baby remain in running water, possibly at a temperature of from 60 to 70 F., before the skin will slip or remove easily?

W. W. Diamond, M.D., Jackson, Miss.

Answer.—There does not seem to be any specific information about the question asked, but a statement of some assistance is the following, from Ralph W. Webster's "Legal Medicine and Toxicology" (Philadelphia, W. B. Saunders Company, 1930, p. 102): "It is almost impossible to state exactly the duration of submersion of a body. Whatever opinion one decides to offer must depend upon the alterations in the body from maceration and putrefaction. . . . These changes . . . are open to wide variation, depending upon such factors as season and climate, and the consequent temperature of the water; depth of submersion; character of the water; motion of the water, and state of general health of the body at the time of submersion. Hence . . . answers . . . should be very guarded, consideration being taken of the fact that the signs of putrefaction in water appear, in general, only about half as fast as in air."

In order to answer the question as accurately as possible, the following experiment was performed. A full term fetus weighin 2,835 Gm. (6¼ pounds) and measuring 50 cm. in length died as the result of a prolapse of the cord. Within one hour after the child's death it was delivered and immediately submerged in running water at a constant temperature of 70 F. Observations were first made every twelve hours. Until forty-eight hours, no changes were observed in the skin. At the end of this time, however, superficial desquamation began to occur. At the end of fifty-two hours the skin from the body folds could be peeled off, but with difficulty. During the following twelve hours the skin became looser and water collected in the subcutaneous tissue. At the end of sixty-four hours the skin of the torso and the extremities could be peeled off, but still with some effort. During the next eight hours the body floated to the surface of the water. At the end of seventy-two hours there was generalized maceration of the skin and marked infiltration of the subcutaneous tissue with water. The experiment had to be terminated at this time because of the disagreeable penetrating odor of decaying tissue that permeated the room.

CASTS OF UTERINE MUCOSA

To the Editor:—What is the probable cause and probable significance of casts of the uterine mucosa? What of repeated casts? What would constitute efficient treatment? The patient has a retroverted uterus with elongated cervix and seemingly a larger uterus than is common to a nonparous woman.

G. E. Dutter, M.D., Kane, Pa.

Answer.—Expulsion of casts of the uterine cavity during menstruation is uncommon. In most instances the passage of these casts is accompanied by severe and cramplike pains, and this condition is known as membranous dysmenorrhea. Whether or not pain is present when the mucous membrane is passed, menstruation is otherwise regular and normal in most cases. Until the studies of Hitschmann and Adler, it was commonly held that the expulsion of casts was the result of an inflammatory process. However, this belief was invalidated by the knowledge given us by these two investigators of the histologic changes that occur in the endometrium during the menstrual cycle. It is now known that, in the premenstrual period, two distinct layers may be detected in the endometrium. The superficial or compact layer contains a large amount of stroma and few glands, whereas the deep or spongy layer has an abundance of glands and much less stroma than the superficial layer. The stroma cells in the compact layer are frequently so much hypertophied that they resemble decidual cells. Normally, during menstruation, pieces of the superficial layer of endometrium are separated and expelled with the bleeding that takes place. Hitschmann and Adler believe that the separation and expulsion of a uterine cast represent an exaggerated form of the normal process, so that there is a complete separation of the superficial from the compact layer in one piece. These authors maintain that the responsible factor for this gross separation is unusually strong contractions of the uterus, which in turn are due to an obstruction of the cervical canal by a clot of blood. However, this theory is most likely erroneous because dilation of the cervix does not usually relieve patients with membranous dysmenorrhea. Ehrenfest believes that in some cases the septums between the glands of the spongy layer may be almost entirely destroyed. The causes of the destruction may be interstitial hemorrhage and excessive compression from the retention of secretions in the glands. If the destruction of the interglandular septums leads to rupture of blood vessels, a submucous hematoma may form and produce detachment of the mucosa.

It is important to differentiate a uterine cast from an early abortion, and usually a histologic study is necessary for this. Even then it is sometimes difficult to make the distinction if chorionic villi are absent, because in many cases the stroma cells closely resemble decidual cells. Vaginal membranes are easy to rule out by microscopic examination, and in nearly all these cases there is a history of irritant douches or local treatment by a physician.

The treatment is usually unsatisfactory, but occasionally there are spontaneous remissions. In former years, local treatment by the intra-uterine application of destructive drugs such as iodine and phenol was used, but without success. Even dilation and curettement have no beneficial effect; but this is to be expected, judging from the knowledge of the histologic changes in the endometrium. General supportive treatment, including sufficient rest, tonics, exercise and care of the bowels, may help. If pain is present, sedatives are, of course, to be administered. The expulsion of casts per se has no special significance and as far as is known does not lead to any serious consequences.

BESREDKA'S SOLUTION IN INFECTIONS OF ANTRUM

To the Editor:—What is Besredka's solution? What are the indications for its use, and what is its value? Would it be safe to use, or of any value, as an irrigating solution for an infected antrum before a radical operation or after a radical operation when the infection does not clear up? When antrums still continue to drain a small amount continuously, a year after a double radical operation, would any solution other than the usual cleansing solutions assist in clearing them up? All possible ways of building up resistance are being followed. Please omit name and address.

M.D., Texas.

Answer.—Besredka's solution is a form of vaccine or bacterial antigen prepared according to a certain fashion. Besredka of the Pasteur Institute on the basis of experiments has added some new ideas on the prophylaxis and treatment of certain bacterial infections. In the case of certain organisms, such as the staphylococcus, treatment by means of vaccines prepared in the ordinary fashion are frequently disappointing. Besredka claims that when certain organisms are grown in broth or broth serum mediums and the organisms are filtered off, there are at least two substances left in the filtrate: a toxic and thermolabile substance which he calls virus, and a thermostable substance which he calls antivirus. When the filtrate is heated, the virus is destroyed and the solution containing antivirus may be used locally and intradermally to establish immunity. The commonest form of local use is by way of wet dressings. For infections due to the staphylococcus or other organisms in which experiments have definitely indicated that antivirus is produced, Besredka's method may be valuable in producing a local as well as general immunity to the offending bacteria. One might have to go to considerable pains to prove this in any individual case, as it would be difficult to demonstrate in a mixed infection which one of the types of bacteria is the cause of the illness. There would then remain the problem of preparing the antivirus. There would be no harm in trying empirically either before or after operation a good commercial preparation of bacterial antigen containing both staphylococcus and streptococcus antivirus prepared after the method of Besredka.

A small amount of drainage from antrums that have been operated on by radical methods is no sign that these antrums are badly diseased, and the presence of such small amounts of secretion should not be responsible for the error of overtreating such sinuses. The patient must be told that he has a disability of minor importance and that he is not to place too great stress on the presence of a slight amount of discharge. Increasing strengths of alcohol up to 50 per cent added to the usual saline irrigating fluid are sometimes valuable in cases such as this.

SALT SUBSTITUTES IN THE DIET

To the Editor:—I want to ask several questions in regard to dietary table salt. Several substitutes are on the market and, no doubt, are valuable in helping the patient to maintain his appetite without breaking the diet of salt restriction. But the advantage of replacing the chlorine ion by an organic acid radical and retaining the sodium ion, as in sodium malate, is not at all an established fact. Keith and Whelan have advocated the use of calcium chloride, ammonium chloride and ammonium nitrate in the treatment of various forms of edema. It would seem that the chlorine ion has no influence on the retention of fluid and that the sodium retention is at least partially the cause of edema. Rowntree made a statement to this effect in the discussion of one of Keith's papers. The mutual antagonism of calcium and potassium to sodium ions is well known, as well as the diuretic action of various potassium salts. Theoretically, potassium chloride would be a good substitute for table salt in various forms of edema, and by replacing the sodium ion might have some therapeutic action. It is less salty in taste than sodium chloride, and somewhat bitter, but when taken with food makes it more palatable than without salt. I have used it in this manner in a case of edema of cardiac origin with very good results, the edema disappearing faster than with novasurol or theophylline diuretics, and the patient's appetite is maintained. Sollmann states that the administration of from 5 to 10 Gm. of potassium chloride produces no symptoms but that potassium poisoning is possible in chronic nephritis. Are there any contraindications to the use of potassium chloride as a salt substitute? Has any one advocated its use in this manner? Are there other advantages in the use of sodium malate?

L. K. ZIMMER, M.D., Lawrence, Kan.

ANSWER.—There is no doubt that certain patients find it a hardship to be on a low salt diet. Nevertheless, it is an extremely important procedure in dietetic therapy in some cases. Since the work of L. F. Meyer and Bloom in 1909, there have been many experiments confirming their original results and assumption that sodium salts may cause retention of fluid within the body. On the other hand, numerous experiments show that potassium, calcium and ammonium salts have a dehydrating or opposite effect. Calcium chloride and ammonium chloride have been given in large doses both to normal individuals and to patients, without toxic effects, although it must be remembered that the dose should be carefully considered in a case of renal disease with nitrogen retention and a tendency to acidosis. Potassium salts have been known to be toxic, but considerable amounts have been given both to normal individuals and to patients with edema in the last few years, and no actual toxic results have been reported. Therefore, the use of small amounts of potassium chloride, ammonium chloride and calcium chloride as substitutes for sodium chloride in the diet is preferable to a sodium organic compound, such as sodium malate.

EFFECTS OF CORROSIVE MERCURIC CHLORIDE ("BICHLORIDE") DOUCHES

To the Editor:—I have at present under treatment and observation a girl, aged 19, who has been married since November, 1931. At the time of her marriage she began using a certain proprietary tablet, composed largely of bichloride of mercury, as a douche. She used two tablets usually in the solution and occasionally resorted to the douche several times daily. The patient was seen by a physician, who told her that she was absorbing mercury compounds and that the cervix was burned. She came under my observation recently and I find that the anterior lip of the cervix is apparently hypertrophied and is the seat of a scar. The entire os appears swollen and is extremely friable when touched with forceps. This patient is five months pregnant and is apparently doing well. I am in doubt as to the proper procedure in this case at present. Should the cervix be treated medically and, if so, with what particular preparation or should it be cauterized? Please omit name.

M.D., Missouri.

ANSWER.—The habitual use of corrosive mercuric chloride ("bichloride") douches is harmful because of the local irritation produced. Corrosive mercuric chloride tablets are occasionally placed in the vagina for the purpose of preventing conception. This is a dangerous practice and sometimes results in death. The fatal termination in such cases is usually due to local corrosive action; the amount of mercury compounds absorbed is probably rather small. Similarly, the effect of corrosive mercuric chloride douches on the patient has probably been chiefly local.

Avoidance of more corrosive mercuric chloride douches and maintenance of cleanliness are the essentials in the treatment. Soothing vaginal suppositories may be used. Of these two may be mentioned: (1) a suppository containing hydrastis, 0.3 Gm. (5 grains); sodium bicarbonate, 0.65 Gm. (10 grains); cacao butter, q. s.; (2) suppositories containing trinitrophenol as supplied by various drug house. Cauterization at this time would probably be harmful.

TREATMENT OF HIGH BLOOD [illegible] TROPHY OF PROSTATE

To the Editor:—A business man, aged [illegible], otherwise normal, has a blood pressure of [illegible] He does not respond to the simple treatment [illegible] this pressure come from worry? He has [illegible] in the last year. The urine shows a trace of [illegible] The prostate is enlarged and hard, and there [illegible] nation. He has some pain in the back, which [illegible] enlarged prostate. The arteries are hard, [illegible] Would you advise diathermy for the [illegible] for the blood pressure? Please omit name.

ANSWER.—There seems to be [illegible] of treatment of this patient. A [illegible] diastolic of 86 is unusual because [illegible] in the absence of some type of [illegible] example an aortic valvular lesion. [illegible] in conditions of advanced arteriosclerosis [illegible] not be amiss to take the blood pressure [illegible] an hour of rest. A lowering of the [illegible] 20 or 30 mm. is frequently [illegible]

The only suggestion that [illegible] rest for an hour after the [illegible] it is advisable that [illegible] avoided when possible and [illegible] There are no indications for [illegible]

The relatively few symptoms [illegible] ment, the apparent absence of [illegible] the bladder, and the [illegible] trace of albumin are found [illegible] for treatment at the present [illegible] arthritic and muscular [illegible] but certainly is not indicated [illegible]

PROETZ [illegible]

To the Editor:—[illegible] used in [illegible]

[illegible]

To the Editor:—[illegible] of the Proetz treatment [illegible] this treatment [illegible]

To the Editor:—[illegible]

To the Editor:—[illegible]

ANSWER.—The Proetz [illegible] treatment [illegible]

[illegible]

To the Editor:—[illegible] the [illegible] hypodermic injection, yet I have [illegible] reference which treats of [illegible] kindly advise me through Queries [illegible]

ANSWER.—Experiments on hypodermic [illegible] tion of cathartics have [illegible] yielded [illegible] is true that the [illegible] the [illegible] the blood of infected animals, Loewenstein's method frequently failed unless they were there in large numbers.

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L. K. Zimmer, M.D., Lawrence, Kan.

Answer.—There is no doubt that certain patients find it a hardship to be on a low salt diet. Nevertheless, it is an extremely important procedure in dietetic therapy in some cases. Since the work of L. F. Meyer and Bloom in 1909, there have been many experiments confirming their original results and assumption that sodium salts may cause retention of fluid within the body. On the other hand, numerous experiments show that potassium, calcium and ammonium salts have a dehydrating or opposite effect. Calcium chloride and ammonium chloride have been given in large doses both to normal individuals and to patients, without toxic effects, although it must be remembered that the dose should be carefully considered in a case of renal disease with nitrogen retention and a tendency to acidosis. Potassium salts have been known to be toxic, but considerable amounts have been given both to normal individuals and to patients with edema in the last few years, and no actual toxic results have been reported. Therefore, the use of small amounts of potassium chloride, ammonium chloride and calcium chloride as substitutes for sodium chloride in the diet is preferable to a sodium organic compound, such as sodium malate.

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To the Editor:—I have at present under treatment and observation a girl, aged 19, who has been married since November, 1931. At the time of her marriage she began using a certain proprietary tablet, composed largely of bichloride of mercury, as a douche. She used two tablets usually in the solution and occasionally resorted to the douche several times daily. The patient was seen by a physician, who told her that she was absorbing mercury compounds and that the cervix was burned. She came under my observation recently and I find that the anterior lip of the cervix is apparently hypertrophied and is the seat of a scar. The entire os appears swollen and is extremely friable when touched with forceps. This patient is five months pregnant and is apparently doing well. I am in doubt as to the proper procedure in this case at present. Should the cervix be treated medically and, if so, with what particular preparation or should it be cauterized? Please omit name.

M.D., Missouri.

Answer.—The habitual use of corrosive mercuric chloride ("bichloride") douches is harmful because of the local irritation produced. Corrosive mercuric chloride tablets are occasionally placed in the vagina for the purpose of preventing conception. This is a dangerous practice and sometimes results in death. The fatal termination in such cases is usually due to local corrosive action; the amount of mercury compounds absorbed is probably rather small. Similarly, the effect of corrosive mercuric chloride douches on the patient has probably been chiefly local.

Avoidance of more corrosive mercuric chloride douches and maintenance of cleanliness are the essentials in the treatment. Soothing vaginal suppositories may be used. Of these, two may be mentioned: (1) a suppository containing hydrastis, 0.3 Gm. (5 grains); sodium bicarbonate, 0.65 Gm. (10 grains); cacao butter, q. s.; (2) suppositories containing trinitrophenol as supplied by various drug house. Cauterization at this time would probably be harmful.

TREATMENT OF HIGH BLOOD PRESSURE—HYPERTROPHY OF PROSTATE

To the Editor:—A business man, aged 79, whose heart and blood are otherwise normal, has a blood pressure of 208 systolic and 86 diastolic. He does not respond to the simple treatment I have given him. Does this pressure come from worry? He has had a lot of business worries in the last year. The urine shows a trace of albumin and a few pus cells. The prostate is enlarged and hard, and there is some frequency of urination. He has some pain in the back, which evidently comes from the enlarged prostate. The arteries are hard, with evidence of arteriosclerosis. Would you advise diathermy for the prostate? What would you advise for the blood pressure? Please omit name.

M.D., Iowa.

Answer.—There seems to be little indication for any kind of treatment of this patient. A systolic pressure of 208 and diastolic of 86 is unusual because of the low diastolic pressure in the absence of some type of organic heart disease, as for example an aortic valvular lesion. Occasionally this may occur in conditions of advanced arteriosclerosis. However, it would not be amiss to take the blood pressure before and after half an hour of rest. A lowering of the systolic blood pressure of 20 or 30 mm. is frequently found after a rest period.

The only suggestion that might be made is that the patient rest for an hour after the noon and evening meals. Of course, it is advisable that undue exertion and mental strain be avoided when possible and that sufficient rest be obtained. There are no indications for medication of any sort.

The relatively few symptoms referable to prostatic enlargement, the apparent absence of indications of residual urine in the bladder, and the mere fact that only a few pus cells and a trace of albumin are found in the urine furnish no indications for treatment at the present time. Diathermy is of value for arthritic and muscular pains, which might be the case here, but certainly is not indicated as a means of treating the prostate.

PROETZ TREATMENT FOR INFECTION OF SINUSES

To the Editor:—Please be good enough to describe the Proetz treatment used in ethmoid and sphenoid infections.

N. I. Ardan, M.D., Niagara Falls, N. Y.

To the Editor:—In the last issue of The Journal, mention is made of the Proetz treatment of sinusitis. Will you briefly outline just what this treatment is? Kindly omit name.

M.D., Jersey City.

To the Editor:—What is the Proetz treatment for sinusitis and where may reference be had relative to its use?

W. T. Winters, M.D., Chicago.

To the Editor:—Will you kindly explain what the Proetz treatment for sinuses is, and how is it given? Please omit name.

M.D , California.

Answer.—The Proetz method both for diagnosis and for treatment is used in certain sinus conditions, especially those involving the ethmoids and the sphenoids. The head is placed in the proper position with the chin pointing upward and then the air in the ethmoid cells and the sphenoid sinus is displaced with some radiopaque oil by means of alternate suction and release, applied to the nose by means of some form of pump. The nozzle of the pump is inserted in one nostril, the opposite one is closed alternately, and at the same time the patient's palate is raised by the production of the sound of the letter K. Examination of the roentgenograms taken directly afterward may show filling defects. The length of time required for drainage of the iodized oil from the sinuses before they are entirely emptied serves as a diagnostic and prognostic measure. Dr. Proetz also uses for treatment a dilute solution of epinephrine or ephedrine introduced into the sinuses involved, in the same manner. The fluid remains in the cells a considerable length of time, thus giving a rather lasting astringent effect. This method of Dr. Proetz is most easily applicable to the sphenoids and ethmoids, and often affords much relief. It is difficult to get radiopaque fluid into the frontal sinus, but it may be introduced into the antrum by way of the inferior or the middle meatus.

HYPODERMIC MEDICATION FOR LAXATIVE EFFECT

To the Editor:—Within a relatively short time I have had two patients acutely troubled with constipation whose medical condition was such that medication neither by mouth nor by rectum was practicable. I am aware that laxatives (cascara sagrada and phenolphthalein) may be given by hypodermic injection, yet I have not been able to lay my hands on a reference which treats of the dosage and possible ill effects. Will you kindly advise me through Queries and Minor Notes. Please omit name.

M.D., Pennsylvania.

Answer.—Experiments on hypodermic and intravenous injection of cathartics have not as yet yielded practical results. It is true that the phenolphthaleins, the anthracene purgatives such as aloin, and the resinous cathartics such as podophyllin and colocynthin produce increased peristalsis on subcutaneous or intravenous administration, the effect being due to excretion of the active principles into the intestine by the bile. Subcutaneous injection is, however, too irritating and painful, and intravenous injection too prone to cause undesirable side-effects; nor is the degree of action sufficiently controllable when such bodies are injected. The most practical agent to increase intestinal peristalsis by subcutaneous injection, most especially in such conditions as postoperative paralytic ileus, is physostigmine salicylate, which may be injected in doses of 2 mg. (one-thirtieth grain) hypodermically. Larger dosage is not advisable.

SENSITIZATION TO THYROID

To the Editor:—I have a patient, aged 28, single, who about one year ago had her thyroid removed. Her basal metabolic rate prior to operation had been plus 21. Now she is apparently in excellent health but is beginning to show symptoms of hypothyroidism. She has gained about 35 pounds (16 Kg.) since the operation and is continuing to gain. One week ago I did a basal metabolism determination and found her to have minus 25, which corroborates my diagnosis of hypothyroidism, which in all probability is due to a too radical removal of the thyroid gland. I have put her on thyroid, one-half grain (0.03 Gm.) three times a day, and after several days she developed a reaction in the form of an eruption, and I had to stop the thyroid. All her life she has had an idiosyncrasy toward certain drugs, such as quinine, santonin and bromides, and the type of reaction she developed is somewhat similar to arsenical dermatitis and incapacitates her for several weeks. After the rash had disappeared I put her on a much smaller dose of thyroid (one tenth grain, or 0.006 Gm., three times a day). Will you kindly advise me as to whether or not to continue the thyroid if the rash persists? She is in dire need of the medication. How can I desensitize her so that she can continue with her medicine?

M.D., Kentucky.

Answer.—The undesirable effects of iodide therapy, which includes desiccated thyroid, can at times be avoided by the simultaneous administration of small doses of an arsenic preparation, three or more minims of solution of potassium arsenite, daily. In the event that this fails, attempts to desensitize the patient to thyroid should be made by administering minute doses of the medicament daily, 1/1,000 grain to begin with and after a few days very gradually increasing the dose. If this procedure is not practical, the thyroid will have to be given in ordinary doses intermittently.

ESTIMATING BASAL METABOLIC RATE

To the Editor:—Is the following formula, which I culled from The Journal some years ago, for estimating the basal metabolic rate considered fairly accurate? B. M. R. = 0.683 (pulse rate plus 0.9 pulse pressure) — 71.5. Please omit name.

M D., New Jersey.

Answer.—The formula as given is fairly accurate for an approximate determination of the basal metabolic rate under most circumstances. The only variables in the formula are the pulse rate and pulse pressure, and since the thyrotoxic state is usually associated with a tachycardia and increased pulse pressure, the basal metabolic determination would be roughly parallel to the regular accepted method of metabolic rate determinations. This formula would be decidedly inaccurate in certain cardiac and vascular disturbances associated with rapid or slow pulse rates, such as arrhythmias; in hypertension or arteriosclerosis; in aortic regurgitation from various causes, and in hypothyroidism with normal pulse rate and pulse pressure.

Since there are so many reasonably priced and scientific methods of basal metabolic rate determinations which take into account the comparison of the actual oxygen consumption and the accepted normal oxygen consumption, it would be unwise to go into a process of mathematical computation which gives no more accurate information than taking the pulse rate and blood pressure.

JELLYFISH AND STINGING NETTLES

To the Editor:—The otherwise excellent note on jellyfish and stinging nettles in The Journal, July 16, omits one important bit of information which should be generally disseminated by medical men for the protection of the public. The translucent, threadlike tentacles of the Portuguese man-of-war may reach a length of 30 feet and are commonly from 10 to 20 feet long. They trail out behind the body as it drifts over the surface of the sea and as they are hardly visible in sea water, it is easy for swimmers who approach too closely to inspect the beautifully colored bladder to come in contact with them. I speak from personal experience and I have no desire to approach nearer than 100 feet to another. The tentacles are undoubtedly venomous and far more severe in effect than the stinging shock of the true jellyfish. Cases of local and general reaction severe enough to require several months' hospitalization are on record (at John Sealy Hospital, Galveston, among others).

John G. Hanna, Florida.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

American Board for Ophthalmic Examinations: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Obstetrics and Gynecology: The examination will be held in nineteen different cities in the United States and Canada, Oct. 22. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board of Otolaryngology: Montreal, Sept. 17. Sec., Dr W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

California: *Reciprocity.* Los Angeles and San Francisco, Sept. 21. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

National Board of Medical Examiners: The examinations in Parts I and II will be held at all centers where there are five or more candidates available in a Class A medical school, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

New Hampshire: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

New York: Albany, Buffalo, New York and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 State Education Bldg., Albany.

Oklahoma: Oklahoma City, Sept. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

Porto Rico: San Juan, Sept. 6. Sec., Dr. O. Costa Mandry, Hospital Municipal, Santurce, San Juan.

Wisconsin. *Reciprocity.* Milwaukee, Sept. 13. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

Connecticut Homeopathic Report

Dr. Edwin C. M. Hall, secretary, Connecticut Homeopathic Medical Examining Board, reports the meeting held at New Haven, March 8, 1932. One physician was licensed by endorsement. The following college was represented:

College — LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Hahnemann Medical College and Hospital, Chicago	(1915)	Illinois

Oklahoma June Report

Dr J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, June 8-9, 1932. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Forty-nine candidates were examined, all of whom passed. Four physicians were licensed by reciprocity with other states and one physician was granted a duplicate license. The following colleges were represented:

College — PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine	(1932)	1
College of Medical Evangelists	(1932)	1
Northwestern University Medical	(1932)	1
State University of Iowa College		1
Washington University School of		1
University of Oklahoma School of		43
University of Tennessee College		1

College — LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1930)	Arkansas
Rush Medical College	(1923)	Illinois
Tulane University of Louisiana School of Medicine	(1928)	Mississippi
University of Minnesota Medical School	(1929)	Minnesota

Porto Rico March Report

Dr. O. Costa Mandry, secretary, Porto Rico Board of Medical Examiners, reports the written and practical examination held at San Juan, March 1, 1932. The examination covered 17 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. The following colleges were represented:

College — PASSED	Year Grad.	Per Cent
Tulane University of Louisiana School of Medicine	(1930)	75.0
University of Paris Faculty of Medicine	(1921)	76.7

Dr. O. Costa Mandry also reports 2 physicians licensed by endorsement Feb. 24, and April 1, 1932, respectively. The following colleges were represented:

College — LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Syracuse University College of Medicine	(1929)	New York
Jefferson Medical College of Philadelphia	(1927)	U. S. Army

Book Notices

Gynecological Roentgenology: A Roentgen Atlas of the Female Generative Organs with Special Reference to Uterosalpingography and an Outline of Gynecology in Its Relations to Roentgenology with Case Histories and a Chapter on Radium Therapy. By Julius Jarcho, M.D., F.A.C.S., Attending Gynecologist and Obstetrician, Sydenham Hospital, New York. Volume XIII of Annals of Roentgenology: A Series of Monographic Atlases. Edited by James T. Case, M.D., Professor of Roentgenology, Northwestern University Medical College. Cloth. Price, $20. Pp. 571, with 278 illustrations. New York: Paul B. Hoeber, Inc., 1931.

Hoeber's latest addition to the series of roentgenologic atlases edited by Case is an imposing, beautifully prepared and printed volume which serves both as an atlas and as an adequate textbook. There exists considerable skepticism in gynecologic circles as to a wide application of the methods of air or opaque oil injection of the tubes. Jarcho is peculiarly well suited to the task of producing this work because of his well established position as a recognized gynecologist who has called to his aid everything that roentgenology can bring. He has in a satisfactory manner correlated the roentgenologic with the clinical observations and set out in well ordered manner the indications and contraindications for uterography and salpingography, and the considerable help which proper use of the x-rays may bring in gynecologic diagnosis. The author has done his work well, conservatively and helpfully, and the book can be recommended as a safe and sane guide to gynecologic roentgenology. Sections are devoted to anatomic and physiologic considerations; historical review, technic and indications for the use of pneumoperitoneum and opaque oil injections of the tubes and uterine fundus; therapeutic applications of uterosalpingography, and the contraindications and dangers attending the method for both diagnosis and therapy. A short chapter is devoted to vaginography. Sterility, developmental anomalies and uterine displacements are next studied. Final chapters are dedicated to the roentgenologic diagnosis of pelvic tumors, with special methods for the study of pelvic inflammatory conditions; and at the close a fifty-page section on radiation therapy for the gynecologist. Every gynecologist should read this book, no matter how skeptical he may be of opaque oil injections into the tubes. The roentgenologist who is called on to assist in and to do the interpretation must have help of this kind.

Ohrenärztliche Untersuchungen von Schülern der Taubstummenschulen Schwedens, nebst Bemerkungen zur Frage des Unterrichts der Schwerhörigen. Akademische Abhandlung welche mit Genehmigung der welterfahrenen medizinischen Fakultät in Upsala zur Erlangung der medizinischen Doktorwürde im Hörsaal des Physiologischen Instituts am 19. Mai 1928 vormittags um 10 Uhr öffentlich verteidigt wird. Von Martha P:son Henning, Med. Lic. Paper. Pp. 278, with illustrations. Uppsala: Almqvist & Wiksell, 1928.

This monograph on the subject of otologic examination of pupils in the deaf mute institutes of Sweden served as a doctor's thesis. There is an excellent chapter on the history of deafmutism together with instruction of deaf mutes. The author states that one of the most important problems of deafmutism in our day is to utilize the remnants of hearing if they are of sufficient degree that the individual may be trained by way of his own ears. She calls attention to the fact that in ancient times a deaf mute was neglected or even maltreated, as deafmutism was considered a mental disease. Exceptions to this rule were said to exist in ancient Persia and Egypt, where deaf mutes were considered favorites of the gods and of heaven. Up to the middle ages, no progress was made until Cardanus in 1560 called attention to the important fact that in deafmutism the deafness is primary, and that mutism is not due to any organic defect in the speech mechanism but appears secondary to the deafness. The subject of the frequency of deafmutism and the method of examination of the hearing is then outlined. The author then recites the actual investigation in the various districts of Sweden, the details of which are indicated in twenty-seven tables. The general conclusions are that: 1. In all schools for deaf mutes, systematic and regular examination should be carried out by otolaryngologists, who shall outline the exact treatment to be followed. 2. In districts in which there are no otologists, arrangements should be made so that at least once a year otologists shall visit the schools to conduct the examination and direct the treatment. 3. It is desirable that all deaf mute pupils should have their eyes examined carefully at least once a year. The latter examination is necessary because in most of these individuals it is necessary that lip reading be instituted, and therefore good eyesight is essential. There is a complete bibliography at the end of the monograph. Altogether this is an interesting and valuable study in deafmutism from a practical standpoint and should prove of value especially to those who are engaged in teaching the deafened and hard of hearing.

The Carnegie Foundation for the Advancement of Teaching, Twenty-Sixth Annual Report of the President and of the Treasurer. Paper. Pp. 129. New York: Carnegie Foundation for the Advancement of Teaching, 1931.

In the chapter entitled "Past and Future" the author says: "Our schools are responsive to popular aspiration and consequently to public opinion as is no other national system of education. Schoolmasters determine the purposes and the policies of education, as distinguished from its procedures, far less than do the clients who organize, support, and control the schools through private or public agencies. . . . The wide range of school performances which we observe in the United States is not the result of a confused professional mind, as some critics superficially assume; it is a clear indication that America is a huge social laboratory in which thousands of sincere, if not always well advised and well controlled, experiments are being conducted. Here social aspiration and criticism, both intuitive and scientific, are at work. . . . The way out of a confusion which has its source in sincere, widespread experimentation is not to have none of it or less of it, as some persons might seem to suggest. The way out is to be found in thoughtful comparison, in appraisal of our richly diverse educational practice, and in selection and diffusion of the best accomplishments." It may be so.

Die Blutkörperchensenkung: Erfahrungen und Bericht über die Literatur der letzten drei Jahre. Von Dr. Max Leffkowitz, Oberarzt der II. Inneren Abteilung des städtischen Krankenhauses Moabit in Berlin. Paper. Price, 2.50 marks. Pp. 39, with 3 illustrations. Berlin: Urban & Schwarzenberg, 1932.

This booklet is a digest of the subject of the suspension stability of blood, based on about 670 articles, which appeared in the medical journals from 1927 to 1931. The nature of the material precludes the possibility of giving a summary of the conclusions, but the extent of the treatment of the subject matter may be seen from the chapter titles. A comprehensive review of the articles is grouped under the headings of fundamentals and theory of the sedimentation reaction, technic and errors, normals, effect of external forces, the condition found when tumors are present, echinococcus infestation, diseases of the circulatory system, blood diseases, infections, tuberculosis, diseases of the gastro-intestinal tract, liver and gallbladder, miscellaneous diseases, and neurologic, psychiatric, obstetric, gynecologic, surgical, urologic, neuromuscular, ophthalmologic, laryngologic, rhinologic, otologic and dermatologic cases. There is a section on the relationship of the sedimentation reaction to other blood reactions, and reviews of articles on animal experiments and observations in veterinary medicine. The whole treatment of the subject is probably one of the best digests covering this specific group of articles that has yet appeared.

Modern General Anesthesia: A Practical Handbook. By James G. Poe, M.D., Lecturer on General Anesthesia in the Medical and Dental Departments of Baylor University, Dallas, Texas. Second edition. Cloth. Price, $2.50. Pp. 231, with 12 illustrations. Philadelphia: F. A. Davis Company, 1932.

The author has set out to write a textbook for students, and he presents the material in a classified and concise form. Theories have been omitted. A large chart is presented which outlines the zones of the third stage of ether or ether sequence anesthesia with signs in each zone. This is followed by a chapter in which various words used in anesthesia are considered. In six chapters the details of the large chart are described in further detail. There are short chapters on anesthesia with ether, nitrous oxide, ethylene-oxygen, chloroform and ethyl chloride, with a short presentation of the advantages and disadvantages, indications and contraindications of each agent, together with instruction in their use. A chapter each is devoted to carbon dioxide, to choice of the anesthetic, and to the use of general anesthetics in obstetrics. Preanesthetic and postanesthetic care of the patient are dealt with separately, as are the nonvolatile anesthetic agents tribrom-ethanol ("Avertin"), sodium iso-amylethyl barbiturate (sodium amytal), and β-brompropenylisobutyl barbituric acid (pernocton), and local anesthetics. The book is written in a philosophical manner and is brief and convenient.

Ergebnisse der Reiztherapie bei progressiver Paralyse. Herausgegeben von K. Bonhoeffer und P. Jossmann. Sonderausgabe von Heft 65 der „Abhandlungen aus der Neurologie, Psychiatrie, Psychologie und ihren Grenzgebieten." Paper. Price, 14.80 marks. Pp. 154. Berlin: S. Karger, 1932.

This valuable volume contains a series of collected papers by the staff of the Berlin Psychiatric Clinic on various aspects of the treatment of dementia paralytica with malaria. The authors report their observations of more than 2,000 cases treated by the Central Psychiatric Clinic and other clinics of the Berlin municipality in the period 1922-1929. There are in all eleven papers reporting the various aspects of the problem studied. There is an introductory chapter on the general problem of febrile therapy in dementia paralytica by Jossmann. The use of drugs in connection with malaria is discussed by F. Kallmann. The treatment of dementia paralytica with malaria is discussed by E. Heinze, and there is an excellent chapter on the nonspecific protein therapy of malaria by Roggenbau. The new syndrome of the paranoid hallucinatory clinical picture such as one finds after treatment of malaria is discussed by Warstadt. The social aspects of the convalescent patient is discussed by Kathe Misch-Frankl and Möllenhoff. With 23 per cent of recoveries and 40 per cent of improvements, the malarial treatment certainly presents a remarkable advance in treatment. This is the largest series reported thus far in a scientific, systematic way. It is to be regretted that correlative studies such as these have not been made in America.

Modern Treatment Anæsthesia. By W. Stanley Sykes, M.A., M.B., D.P.H., Anæsthetist to the General Infirmary at Leeds. With a Section on Local Anæsthesia. By P. J. Moir, M.C., M.B., F.R.C.S., Hon. Assistant Surgeon, General Infirmary at Leeds. Cloth. Price, $2. Pp. 128, with Illustrations. New York: W. W. Norton & Company, Inc., [n. d.]

This book, says the author, was written for the occasional anesthetist, and it will well serve its purpose. Parts of the volume are written with headings and subheadings; and the frequent use of short, imperative expressions makes the information readily accessible. In reading this book one gets, in a general way, a picture of the methods of anesthetization used at Leeds. These methods, and the apparatus employed, are somewhat different from those used in this country. For this reason the book would be more useful to anesthetists in England than to anesthetists in America. The reader must be impressed with the extensive experience of the author, who also has a happy way of expressing himself. This felicity is particularly evident in the chapter on endotracheal methods, in which he writes: "Some practice is required to introduce the tube quickly and correctly without removing pharyngeal divots." Local and regional anesthesia are barely referred to. The author stresses the use of his device, the safety open ether inhaler, which prevents ether from being spilled on the face.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Das röntgenographische Bewegungsbild und seine Anwendung (Flächenkymographie und Kymoskopie). Von Dr. Pleikart Stumpf, Röntgenfacharzt in München. Mit einem Geleitwort von Dr. Gottfried Boehm, a. o. Professor der Universität München. Fortschritte auf dem Gebiete der Röntgenstrahlen, Ergänzungsband XLI. Herausgegeben von Prof. Dr. Grashey. Paper. Price, 15 marks. Pp. 78, with 117 illustrations. Leipzig: Georg Thieme, 1931.

Previous work of the author is amplified in this monograph, which describes a new, accurate and economical method of recording the movement of internal organs on one film. This is made possible by an adaptation of the kymograph, permitting timed exposures at successive levels and at regularly spaced intervals, with exposed portions being separated by an unexposed strip of the film. By this means, contour curves of maximal and minimal movements, particularly of the heart and the aorta, can be accurately measured. The technic is fully described. A section is devoted to diagnostic application. Results are described in studies of the heart, aorta, pericardium, diaphragm, esophagus and stomach.

Psyllium Seed: The Latest Laxative. A Scientific Treatise. By Dr. J. F. Montague, Medical Director, Montague Hospital for Intestinal Ailments. Cloth. Price, $2. Pp. 170, with 20 Illustrations. New York: Montague Hospital for Intestinal Ailments, 1932.

This seed, because of its resemblance to fleas, has been called flea-seed and was employed by the ancient Egyptians in the form of an infusion for the same purpose for which it is used today. Since the introduction of psyllium into this country, the market for the seeds, for which the French have coined the more pleasing term of "grains de longue vie," or "long life seeds," has increased to such an extent that large areas, most especially in Provence, are now wholly dedicated to its cultivation. The author is convinced that psyllium has advantages over liquid petrolatum in that there can be no leakage, and over bran in that it does not produce undesirable irritation on the intestinal mucosa. The mucilage is partly digestible, but there is still enough left to be distinctly recognizable in the stools. The main contraindication for psyllium seed is ulcer or any other break in the normal surface of the alimentary tract.

Les affections de l'oreille chez l'enfant. Par le Dr. Max Meyer, professeur à l'Université de Wurtzbourg. Traduit de l'allemand par le Docteur P. Gauthier-Villars. Paper. Price, 40 francs. Pp. 201, with 31 Illustrations. Paris: Gauthier-Villars & Cie, 1932.

This is, as the title indicates, a French translation of the excellent monograph published by Dr. Max Meyer of the University of Würzburg in 1930. This work was originally intended for practitioners in pediatrics. Beginning with a description of the method of using instruments in the examination of the ear, a discussion of its physiology follows. Diseases of the external ear are discussed and followed by acute otitis media, chronic otitis media together with tuberculosis and syphilis of the ear as well as labyrinthitis. The last chapters are devoted to traumatic conditions of the ear in the deaf mute child.

As indicated in the preface of the book, the subjects are taken up in a brief manner and from a practical point of view and should prove of great value to the pediatrician, particularly permitting him to diagnose many conditions before more serious complications ensue, thus giving him full opportunity to have the patient, if necessary, receive the benefit of the cooperation of the otologist. The translation itself seems to be a good one and the little volume will prove of considerable interest to its new circle of readers.

Handbook of Physical Therapy. This Volume Contains Articles by Various Authors That Have Been Adopted and Authorized for Publication by the Council on Physical Therapy of the American Medical Association. Cloth Price, $2.50. Pp. 526, with Illustrations. Chicago: American Medical Association, [n. d.]

In the introduction of this volume Dr. Harry E. Mock, chairman of the Council on Physical Therapy, calls attention to the fact that at the close of the reconstruction period after the war the situation in physical therapy rivaled that of the palmy days of "patent medicines" when both the medical profession and the public were flooded with often unwarranted and too many therapeutic claims for physical therapy methods and apparatus. A definite authority was needed to bring about order in the existing chaos, at least so far as organized medicine was concerned, and the Council on Physical Therapy set about with the means and men at its disposal to do this work. The present volume represents a large part of the efforts of the Council to place the use of physical measures on a sound and scientific basis, to separate propaganda from real facts, as far as the use of apparatus is concerned. It is a collection of the series of articles written by members of the Council or special consultants and published in The Journal. Advice based on authoritative investigation is offered on most phases of physical medicine. Special emphasis is laid on the simpler methods of applying heat, massage and exercise in many of the medical and surgical conditions in which physical measures are indicated. The volume should serve as a ready authority for consultation by every practitioner of medicine, who inevitably must need the use of physical measures in one phase or another of his daily work. Those specializing in physical therapy or in any other department of medicine will find these articles indispensable for guidance and for reference. In the present times of stress, the necessity of the physician to do things himself without the aid of assistants is especially evident. No doubt, in the series of articles to follow, further advice based on matured clinical experience will be offered to physicians as to what they can accomplish in the various pathologic and functional conditions, with the basic physical measures available.

Diagnostik und Therapie der Kinderkrankheiten mit speziellen Arzneiverordnungen für das Kindesalter. Ein Wegweiser für den praktischen Arzt. Von Prof. Dr. F. Lust, Director des Kinderkrankenhauses (Bad. Landesanstalt für Säuglings- und Kleinkinderfürsorge) in Karlsruhe. Seventh edition. Paper. Price, 10 marks. Pp. 543. Berlin: Urban & Schwarzenberg, 1932.

There are relatively few books appearing on pediatric treatment. The emphasis in this book is almost entirely on treatment. Only reliable methods of therapy are described and only those methods included with which the author has had experience. A short concise diagnostic summary of each disease precedes the outline of the treatment. The diseases peculiar to childhood are given more space than those common to internal medicine. The changes in this edition express Professor Lust's latest views on subjects in which opinions have changed in the past few years, such as treatment of rickets, scarlet fever, congenital syphilis, asthma and infant feeding. The second part of the book lists drugs commonly used in pediatrics. They are arranged alphabetically and include uses and doses at different ages. Foods used for infants and children and their preparation also are listed. A few pages are devoted to toxicology. A third section is devoted to listing various resorts and climates beneficial for various pediatric pathologic conditions. It is essentially a concise practical book on diagnosis and treatment for the busy general practitioner or medical student rather than for the pediatrician. It has recently been translated into English by Dr. S. A. Levinsohn.

Medical Reporting in Pitman's Shorthand, Isaac Pitman, With an Introduction and Lists of Phraseograms, Outlines and Abbreviations. By Henry Dickinson, Official Shorthand-Writer to the Royal Society of Medicine. New era edition. Cloth. Price, 3/6. Pp. 88. London and New York: Sir Isaac Pitman & Sons, Ltd., [n. d.].

The author of this volume has been for many years a reporter of scientific medical meetings in England. He has found it necessary to develop a great number of signs for medical words and phrases in order to gain speed. His book on the subject is largely a list of such signs, and a number of exercises to be practiced by the shorthand writer who wants to acquire speed in the medical field. In a brief introduction to his book, Mr. Dickinson explains some of the difficulties liable to be encountered. The volume will be exceedingly useful to any medical shorthand writer.

The Value of Tuberculin Tests in Man with Special Reference to the Intracutaneous Test. By P. D'Arcy Hart. Medical Research Council, Special Report Series, No. 164. Paper. Price, 2s. Pp. 136. London: His Majesty's Stationary Office, 1932.

This report on the value of the Mantoux test contains critical summaries of all important previous statistics and adds a large number of cases tested by the author. The sections on diagnostic applications consider the significance of a positive skin reaction, of a negative skin reaction, the sensitiveness of the tests, and the value in diagnosis and prognosis. The sections on epidemiologic applications consider the value of the tests in the contact clinic and the value of the tests in determining the distribution of tuberculous infection in the community. A number of tables and charts embracing various phases of statistical evidence, and a long list of references, are included. The technic of testing is described in detail. The author discusses the need for carrying the Mantoux test into higher concentrations than usual when necessary, and analyzes with great detail the results of surveys made with various methods of testing. The influence of war, urbanization, social status, race and contact on the incidence of tuberculization is considered, and provides interesting reading provocative of speculation. This work is clearly and concisely written. It presents the best opinion of the present day on the exact status of the Mantoux test and gives the percentage of error as determined in large numbers of patients in various groups. The discussions and conclusions are accurate to a fault. Every worker who does tuberculin testing, and every one who considers tuberculosis statistics, will find a wealth of material in this report.

Alcoholic Fermentation. By Arthur Harden, Ph.D., D.Sc., LL.D. Fourth edition. Cloth. Price, $5.50. Pp. 243, with 10 illustrations. New York: Longmans, Green & Company, 1932.

This excellent treatise has undergone a fourth revision. Since the publication of the third edition a voluminous amount of material on alcoholic fermentation has appeared in the literature. The author has endeavored to include only work of fundamental importance, particularly inclining to the practical aspect rather than the theoretical. A noteworthy chapter presents the involved chemistry of fermentation, in which the function of phosphates plays an illuminating part. Significantly the author points out that the fundamental biologic mode of attack on carbohydrates is that revealed by the study of alcoholic fermentation. The subject still remains one of the most interesting in the whole field of biologic chemistry, the limited degree of insight that has already been gained into the marvelous complexity of the cell lending additional zest to the attempt to penetrate the darkness which shrouds the still hidden mysteries. An extensive bibliography has also been prepared.

Die Schleimhaut des Verdauungskanals im Röntgenbild: Eine normale und pathologische Röntgenanatomie der Innenwand des Verdauungskanals. Von Henri Chaoul und Albert Adam. Mit einem Vorwort von Ferdinand Sauerbruch. Paper. Price, 22.50 marks. Pp. 229, with 219 illustrations. Berlin: Urban & Schwarzenberg, 1931.

Within the recent past, several monographs have been written on the relief pattern of the gastro-intestinal tract in normal and pathologic states. Seemingly these works have arisen as the result of the fundamental studies of Forssell. The monograph of Henri Chaoul and Albert Adam is rich in illustrations and discussion concerning the relief pattern of the mucosa of the gastro-intestinal canal. In addition, the authors have utilized a specially designed compression bulb, which is easily manipulated during the roentgen studies.

Problems in Solutions. By Elizabeth E. Sullivan, R.N., Instructor in Schools of Nursing. Cloth. Price, $1.35. Pp. 100. Boston: M. Barrows & Company, 1932.

Whether it has been a fault in the public school system of America or simply a trait more common to certain minds, the matter of simple proportions is—to the average nurse and oftentimes to physicians as well—most confounding. When the student nurse encounters the elementary arithmetic associated with the making of solutions or the primary problems of chemistry, she is generally, in the language of the street, "up against it." Possibly no one has realized it better than Miss Sullivan, who has had broad teaching experience. How much good such a book will do is problematic. In the first place, one who explains these arithmetical problems should have a reader with patience and a certain amount of intelligence. After this step is successfully passed, Miss Sullivan may get her book across. To one, on the other hand, who has even a fair acquaintance with lower mathematics, the book seems unnecessarily cumbersome and the methods of explanation strongly reminiscent of the third or fourth grade of a progressive school system. If it will keep a nurse who has been told to administer a tablet of one-eighth grain of morphine from giving two tablets of one-fourth grain, it is well worth the effort. To most physicians it is not recommended. For nurses, anything that will help them in laws of proportions and calculations of dosages must be praised. In a few places, however, even Miss Sullivan might be a little more scientific; for instance, the matter of dosage of dextrose is based on a rather unscientific conception.

Un nouveau traitement abortif de l'érysipèle et du streptocoque par les rayons rouges, la chambre rouge et le bandage rouge. Par Dr. Skevos G. Zervos. Paper. Price, 8 francs. Pp. 22. Athènes: The Author, 1932.

This brochure deals uncritically with two cases of erysipelas abortively cured by exposure to rays of sunlight and lamplight filtered through red linen, covering windows, doors and lamps in the sickroom. The clinical data presented are negligible and uncontrolled. No experimental evidence is adduced to prove the author's contention that the streptococci in the erysipelatous area are killed by the specific action of the red rays or that the red chamber, red rays or red bandages will bring about abortive cures of acute exanthematous diseases. This is a cumbrous pamphlet of unscientific reasoning.

Medicolegal

May Hair Turn White as Result of Accident?—The plaintiff's chestnut hair was just beginning to turn gray, but within a day or two after an accident it turned snow white. No medical witnesses were called to express an opinion that the accident was an adequate procuring cause of the change. The jury was instructed that the plaintiff was entitled to be compensated for any changes that had come to her person as a result of the accident. The defendant excepted to so much of the charge as related to the change in the color of the hair. It is a matter of common knowledge or belief, said the Court of Appeals of New York, that hair may grow white in a single night from sudden fears, quoting Byron, in The Prisoner of Chillon. Muller, in "Hair and Its Preservation," says: "Gray hair, so long regarded purely as a sign of approaching or premature age, is simply due to the absence or loss of pigment or the presence of more or less air within the hair, caused either by sickness, worry, shock, severe mental strain long continued, or accidents." Indeed, it is not seriously questioned in this case that gray hair may result from shock. The contention is that a mere sequence of accident and change in color of the hair is an argument of "post hoc, ergo propter hoc"; that some medical man should have been called to say that in his opinion the accident was an adequate producing cause of the gray hair. In many cases jurors might find it difficult, without the aid of medical evidence to connect conditions complained of with an accident, but the results may be of such a character as to enable them to draw their conclusions from their own knowledge or experience. Thus, if a plaintiff testified that after he was struck in the eye he had what is vulgarly known as a black eye, it would be unnecessary to produce an expert witness to say that an extravasation of blood resulting in ecchymosis might follow such a blow. On the other hand, remote and unusual effects of physical injuries, such as cancer or tuberculosis, would call for more than a layman's knowledge of cause and effect. Here we have no difficulty in surmising that if a medical man had been called by the plaintiff and asked on a hypothetical question, including the facts testified to, what caused the change in the color of the hair, he would have said that in his opinion it was due to the accident. The failure to give professional sanction to a result for which no other adequate cause is remotely suggested ought not to cost the plaintiff her judgment, especially as it appears that the jury did not take seriously the pecuniary loss due to the sudden change in the color of hair which was already beginning to turn gray. The judgment in favor of the plaintiff was affirmed.—*Shaw v. Tague (N. Y.), 177 N. E. 417.*

Workmen's Compensation Acts: Bites of Wood Ticks an Accident.—Pierce was exposed to the bites of wood ticks, in Idaho, in the course of his employment, from day to day, after March 25, 1930. He was taken sick, April 3, and died, April 9, of Rocky Mountain spotted fever. The Supreme Court of Idaho held that the tick bite or bites, the injury or injuries, that caused the Rocky Mountain spotted fever that resulted in death was an "accident," since it was, in the ordinary and popular sense of the term, an unlooked-for mishap which was neither expected nor designed. The fact that an accidental injury results in a disease does not alter the nature or the consequential results of such an injury. The deceased, the court held, received a "personal injury" by accident arising out of and in the course of his employment.—*Reinoehl v. Hamacher Pole & Lumber Co. (Idaho), 6 P. (2d), 860.*

Authority of Court to Order Roentgenograms of Plaintiff in Personal Injury Action.—A New Jersey statute authorizes a court before which an action for damages for personal injuries is pending to direct that roentgenograms of the plaintiff be taken by a competent roentgenologist in the presence of a representative of all parties to the action (P. L. 1931, p. 124). The plaintiff contended that this statute is unconstitutional under the Fourteenth Amendment of the Constitution of the United States. A number of decisions in other jurisdictions, said the Supreme Court of New Jersey, have held that in the absence of a statute the court cannot compel the plaintiff undergoing an examination before trial to submit to the taking of roentgenograms. These decisions rested on the lack of confidence on the part of the court in the safety of the process, not on the lack of power of the court to require an examination before trial. The New Jersey legislature, the court assumed, in enacting this statute decided that there was perfect safety and propriety in the taking of roentgenograms. Hence the order of a court made pursuant to the statute is as well within its power as an order directing the plaintiff to submit to a physical examination in the presence of her physician by a competent physician chosen by the defendant. The statute is valid and in the absence of an abuse of discretion an order entered under its authority is valid.—*Golden v. Public Service Coordinated Transport (N. J.), 157 A. 651.*

Alleged Gestation Period of 320 Days.—The plaintiff gave birth to a normal child after an uneventful pregnancy, 320 days after what she testified was her last act of intercourse with the defendant. She denied having had intercourse with any other man. The judgment of the trial court holding that the defendant was the father of the child was reversed by the Supreme Court of Wisconsin and the cause remanded for a new trial. Medical literature, said the Supreme Court, indicates that while such cases of extended pregnancy are not unknown, they are extremely rare. Against these few scattering cases, there is the vast common experience of mankind with respect to the regularity of the course of nature as regards both man and the mammals generally. If there was any evidence of a delayed pregnancy, if there was any evidence that the child exhibited when born signs of a protracted pregnancy or other untoward circumstance, the case might be quite different. It is considered, said the court, that no one can say beyond a reasonable doubt that the defendant was the father of this child. The most that can be said—and to say that taxes one's credulity—is that such a thing was barely possible. The law requires guilt to be established by evidence which convinces the jury beyond a reasonable doubt. The fact that in the course of the history of medical science a few cases have been gathered together which in the main depend for their authenticity on the unsupported statement of the mother, from which it appears that such protracted pregnancies may occur, does not satisfy the rule of law.—*Gillis v. State (Wis.), 238 N. W. 804.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Montreal, Sept. 19-23. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb., Executive Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, French Lick, Indiana, Sept. 12-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.
American Congress of Physical Therapy, New York, Sept. 6-10. Dr. F. B. Balmer, 185 North Wabash Avenue, Chicago, Secretary.
American Hospital Association, Detroit, Sept. 12-16. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.
American Physical Therapy Association, Detroit, September 28-30. Dr. C. C. Vinton, 585 West End Avenue, New York, Secretary.
American Roentgen Ray Society, Detroit, September 27-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
Colorado State Medical Society, Estes Park, Sept. 8-10. Mr. Harvey T. Sethman, 227 16th Street, Denver, Executive Secretary.
Delaware, Medical Society of, Lewes, September 27-28. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
Idaho State Medical Association, Pocatello, Sept. 16-17. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.
Indiana State Medical Association, Michigan City, September 27-29. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
Michigan State Medical Society, Kalamazoo, Sept. 13-15. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.
Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
Oregon State Medical Society, Klamath Falls, Sept. 22-24. Dr. Albert W. Holman, 410 Taylor Street, Portland, Secretary.
Utah State Medical Association, Ogden, Sept. 15-17. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.
Washington State Medical Association, Tacoma, Sept. 12-14. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

American Journal of Hygiene, Baltimore

15: 601-840 (May) 1932

Malaria Studies on Firestone Rubber Plantation in Liberia, West Africa. M. A. Barber, J. B. Rice and J. Y. Brown, Monrovia, Liberia, West Africa.—*p.* 601.

Anopheles Gambiae in Brazil. R. C. Shannon, Bahia, Brazil.—p. 634.

Further Studies on Ancylostoma Braziliense and Etiology of Creeping Eruption. W. E. Dove, Baltimore.—p. 664.

Electrophoresis of Normal and Chemically Treated Strains of Pneumococci. R. L. Thompson, Baltimore.—p. 712.

Studies on an Acquired Resistance of Chickens to the Nematode Ascaridia Lineata (Schneider). G. L. Graham, J. E. Ackert and R. W. Jones.—p. 726.

Budding and Other Variations in Endolimax Nana: Comparison with Councilmania Tenuis Kofoid, 1928. Bess E. Segal, Philadelphia.—p. 741.

Further Infectivity Experiments with Mosquitoes and Bird Malaria. C. G. Huff, Chicago.—p. 751.

Effect of Infra-Red Radiation on Bacterium Lepisepticum Abscesses in Rabbit. Janet H. Clark and Jeannette Chapman, Baltimore.—p. 755.

Chromium Toxicology: Absorption of Chromium by Rat When Milk Containing Chromium Was Fed. Lillian W. Conn, H. L. Webster and A. H. Johnson, Binghamton, N. Y.—p. 760.

Factors Influencing Calcium Concentration in Serum of the New-Born. H. Bakwin and Ruth Morris Bakwin, New York.—p. 766.

Notes on Louisiana Culicoides (Diptera Ceratopogoninae). E. H. Hinman, New Orleans.—p. 773.

Pleural Hairs of American Anopheline Larvae. F. M. Root, Baltimore.—p. 777.

Serologic Relationships of Endamoeba Histolytica. P. E. Menendez, Baltimore.—p. 785.

*Pathologic Studies of Human Amebic Ulcers, Especially Those of Carriers. K. Hiyeda and M. Suzuki, Mukden, China.—p. 809.

Complement Deficient Guinea-Pig: Study of an Inheritable Factor in Immunity. R. R. Hyde, Baltimore.—p. 824.

Human Amebic Ulcers.—Hiyeda and Suzuki describe the pathologic changes in five human cases in which amebic ulcers were found in the large intestine. They give the course of an amebic infection as follows: When the amebas enter the lumen of the large intestine, the intestinal epithelium produces a large amount of mucus, which prevents many of the amebas from entering the tissues. The struggle between the amebas and the mucus may last for from two to eight days; this may be verified experimentally. If the amebas succeed in coming in contact with the epithelium, they give rise to necrosis or necrobiosis of the superficial epithelial layer. They multiply when they come in direct contact with the tissue, even though they are actually in the lumen of the intestine. Toxic substances produced by the amebas lead to the necrosis of the mucous membrane. In this way the roughness of erosion of the superficial mucous membrane occurs. The amebas make their way deeper into the intestinal wall, multiply there, and produce a large area of necrosis; finally, a typical large crater ulcer develops. If the secondary bacterial infection is severe, there will result an abscess. A crater ulcer may also result from the bursting of such an abscess, although this is not usual. The amebas within the tissue of the submucosa make their way mostly longitudinally to the axis of the intestine. This is why the ulcers are wider below the surface and why they build the tunnel-like communications under the intact epithelial covering. If the regenerating activities of the epithelial cells and other intestinal tissues overcome the invading power of the amebas, the reparation of the ulcer occurs, causing a thickening of submucosa. But restitutio ad integrum is never reached as long as the amebas are present. If small ulcers occur with only a few amebas in their vicinity, the balance of amebic vitality and tissue resistance is well kept, and no marked intestinal symptoms may occur. This is the condition of the ameba carrier. Cellular infiltration in amebic ulcers mainly depends on mixed infection of bacterial origin. None of the leukocytes have a special affinity for the amebas or their products. The amebas in equilibrium with the local tissues will remain so for long periods, but if the equilibrium is broken in some way, the amebas may become active again and give rise to an acute exacerbation.

American J. Obstetrics and Gynecology, St. Louis

23: 619-774 (May) 1932

Passage of Sperms and Eggs Through the Oviducts of Rabbit and Human Being with a Consideration of Sampson's Theory of Hemorrhagic or Chocolate Cysts. G. H. Parker, Cambridge, Mass.—p. 619.

*Maternal Mortality and the Mercurochrome Technic: Analysis of Deaths Following Fifteen Thousand Six Hundred and Forty-Seven Deliveries at Methodist Episcopal Hospital, Brooklyn, N. Y., Ten Thousand of Which Followed Use of Mercurochrome as a Vaginal Antiseptic. H. W. Mayes, Brooklyn.—p. 627.

*Age Distribution of Fifteen Thousand Three Hundred and Seventy Obstetric Patients and Its Effect on Type of Delivery. C. H. Peckham, Baltimore.—p. 635.

New Analysis of Duration of Pregnancy Data. H. Hotelling and Floy Hotelling, New York.—p. 643.

*Eclampsia Without Convulsions or Coma. W. J. Dieckmann and C. R. Wegner, St. Louis.—p. 657.

Study of Blood and Urinary Amylase in Pregnancy and Its Late Toxemias. A. N. Arneson and K. C. Morrin, St. Louis.—p. 664.

Blood Chemistry Study in Normal Pregnancy and Eclamptogenic Toxemia. S. Kaplan, Chicago.—p. 673.

*Analytic Study of One Thousand Cases of Cesarean Section. M. Courtiss and J. C. V. Fisher, Boston.—p. 679.

*Relation of Amenorrhea Accompanied by Genital Hypoplasia to Follicular Hormone in Urine. R. Kurzrok and Sarah Ratner, New York.—p. 689.

Excretion of Estrin During Pregnancy. Dorothy Edwards, Chicago.—p. 694.

Therapeutic Value of Amniotin in Menopause. S. H. Geist and F. Spielman, New York.—p. 697.

Therapeutic Value of Theelin in Menopause. S. H. Geist and F. Spielman, New York.—p. 701.

Further Study of Anterior Pituitary Sex Hormones. S. D. Soule, St. Louis.—p. 708.

Aschheim-Zondek Reaction in Rabbits. F. J. Schoeneck, Syracuse, N. Y.—p. 712.

Modifications of Hormone Tests for Diagnosis of Pregnancy. R. A. Lifvendahl, Chicago.—p. 721.

*Comparison of Sedimentation and Ruge Virulence Tests in One Hundred and Fifty Gynecologic Cases. W. A. Simunich, Chicago.—p. 724.

*Unreliability of Laboratory Aids in Diagnosis of Gonorrhea in Women. A. Jacoby, New York.—p. 729.

Some Observations Concerning Erythematous Eruptions Simulating Scarlet Fever Developing in Puerperium. P. F. Stookey and Cornelia M. Downs, Kansas City, Mo.—p. 735.

Effect on the New-Born Child of Sodium Iso-Amylethyl Barbiturate (Sodium Amytal) When Used as Obstetric Analgesic and Anesthetic. G. S. Littell, Dallas, Texas.—p. 741.

Bacteriology of the New-Born, with Especial Reference to Hemolytic Streptococci. L. J. Aries, I. Pilot and Myrtle S. Shafer, Chicago.—p. 745.

Sympus Apus, a Rare Fetal Anomaly: Report of Case. R. A. Reis and J. L. Baer, Chicago.—p. 749.

Preliminary Report on Use of Sodium Amytal and Scopolamine Anesthesia During Labor. H. B. Nelson, Boston.—p. 752.

Value of Kidney Visualization in Pregnancy: Preliminary Report. E. L. Cornell and C. H. Warfield, Chicago.—p. 755.

Maternal Mortality and the Mercurochrome Technic.—In a study of the maternal mortality following 15,647 deliveries, Mayes divides the cases into three groups of approximately 5,000 each. The first group, in which no vaginal antiseptic was used, covered a period from 1919 through 1924; the second, or experimental mercurochrome group, from 1925 through 1927; and the third group, with the latest mercurochrome technic, from 1928 to August, 1930. There were as many maternal deaths in the 5,000 deliveries before the use of mercurochrome as there were in the 10,000 following its use. If the cesarean sections are omitted, there were twice as many maternal deaths during the first 5,000 cases as there were during the last 5,000 cases, while with vaginal deliveries of children there were four times as many in the first series. The death rate from cesarean sections in the first group was 7.1 per cent, and in the second and third groups 2.6 per cent. Shock and hemorrhage accounted for 8 deaths in the first series, 2 in the second and 2 in the third. Eclampsia was given as the cause of 3 maternal deaths following the vaginal delivery of a viable child and 4 deaths following cesarean section in group 1, while in the mercurochrome series there was but one death from eclampsia in the vaginal deliveries of viable children. There were 17 deaths from sepsis in the first group, 9 in the second and 4 in the third. In the vaginal deliveries of viable children there were 6 deaths from puerperal sepsis in the first group, 8 in the second, and 1 in the third. Following cesarean section there were 7 deaths from sepsis in the first group, 1 in the second and 1 in the third. In the last group only one of the deaths followed the vaginal delivery of a viable child. One followed cesarean section, and the third was a five and one-half months' miscarriage in which infection occurred before admission. On the basis of his observations, the author concludes that if puerperal sepsis accounts for one third to one half of all maternal deaths and is a preventable disease in which there has been no decrease during the last twenty-five years, it seems logical that the use of a vaginal antiseptic during labor and delivery might reduce the number of maternal deaths from this cause.

Age Distribution of Obstetric Patients.—Peckham reports that the mean age of 15,370 obstetric patients, divided almost equally between the white and black races, and containing primiparas and multiparas in almost equal numbers, is just under 24 years. A difference of 6.44 years exists between primiparas and multiparas. The mean age is significantly lower in black than in white primiparas (1.97 years); and an even greater variation was observed in the multiparas (3.15 years). The number of "young primiparas" (under 17) is greater among the black race, while fewer "elderly primiparas" (35 or over) are found. The child-bearing career seems to end earlier in the black than in the white woman. The ratio of operative to spontaneous deliveries at term is lower among black primiparas, despite a much higher incidence of contracted pelvis. Likewise, a higher percentage of pregnancies terminating prematurely is observed in this race. In both races the percentage of operative deliveries increases with age and in the white race reaches a point in the late thirties where it exceeds the spontaneous type. The probability of spontaneous termination of labor appears to be less good in very young women than in the age group of 17 to 19 years.

Eclampsia Without Convulsions or Coma.—Dieckmann and Wegner review an unusual case of eclampsia without convulsions or coma with especial reference to some of its most obvious clinical, laboratory and postmortem features. Attention is again called to the prime importance of establishing and *maintaining blood dilution in eclampsia.* The author suggests a possibly much more adequate therapeutic agent (acacia) for producing a more lasting hydration of the blood.

Analytic Study of Cesarean Section.—In an analysis of 1,000 cases of cesarean section in which either the classic operation or laparotrachelotomy was performed, Courtiss and Fisher found that the newer procedure is greatly superior in its lower mortality (1:5), its lessened unfavorable response to trial labor (1:13), and the much lower frequency of postoperative morbidity (1:10). They believe that when anatomic consideration or time factor does not necessitate reversion to the classic procedure, laparotrachelotomy is clearly the method of election.

Amenorrhea and Genital Hypoplasia.—In thirteen cases of amenorrhea accompanied by genital hypoplasia, Kurzrok and Ratner noted that the excretion of follicular hormone in the urine was slightly greater than normal. The administration of follicular hormone for therapeutic purposes did not produce either a cure or an improvement in the clinical condition.

Sedimentation and Ruge Virulence Tests.—Simunich observed an increase in sedimentation speed of sixty minutes or less in more than 50 per cent of 150 cases of inflammatory adnexitis and uncomplicated and complicated fibroids and carcinomas, and in about 23 per cent of other abdominal and vagino-abdominal pathologic conditions not of an inflammatory nature. The presence of virulent organisms is one of the most important causes of postoperative morbidity and mortality, but a doubtful or positive virulence test does not depend on the speed of sedimentation. The increase in sedimentation speed is due to some other factor than the virulence of organisms. The sedimentation test is not a reliable guide in the determination of the time for safe operation of adnexal disease. The Ruge virulence test is of value in the prognostication of postoperative morbidity and mortality if the operation takes place at the site of the organisms, usually the cervix. The author believes that the history, the leukocyte and differential counts, the temperature and the physical examination must remain the main guides in the determination of the time for safe operation in adnexal disease, while in cervical and combined cervico-abdominal operations the Ruge virulence test is of undoubted value. A doubtful or positive virulence test contraindicates cervical operations until such time as the test becomes negative.

Diagnosis of Gonorrhea in Women.—Jacoby emphasizes the fact that for the diagnosis of gonorrhea in women repeated smears should be taken and carefully examined. The use of the gram stain is not essential. In conjunction with a proper evaluation of the clinical examination, the methylthionine chloride stain is adequate for practical purposes. A positive smear is conclusive evidence of infection. A negative smear, even when repeated, does not exclude the presence of a gonococcal infection in women. Suspicious organisms, extracellular or intracellular, should be interpreted in accordance with the clinical evidence. Pure spreads of pus cells, even without organisms present, should be regarded as suggestive evidence of gonococcal infection. When cultures are taken and prove positive, they constitute conclusive criteria but are not practical or well adapted to routine practice. A negative culture does not exclude the presence of a gonococcal infection. The complement fixation test for gonorrhea with the present technic is unreliable. Neither positive nor negative results are conclusive. Unless an improved technic affording more reliable results is evolved, the fixation test should not be used for the diagnosis of gonorrhea or for the control of its treatment. Even under the most favorable conditions, it is apparent that laboratory procedures are of minor importance in establishing a diagnosis of gonorrhea in women. A wider appreciation of this fact, with a consequently greater reliance on the history and clinical evidence, will suggest the correct diagnosis in many of the now unrecognized cases of gonorrhea in women.

Annals of Internal Medicine, Ann Arbor, Mich.

5: 1337-1446 (May) 1932

Rheumatic Heart Disease: Review. C. T. Burnett, Denver.—p. 1337.

*Early Manifestations of Rheumatic Infections of Young Children. C. C. McLean, Birmingham, Ala.—p. 1357.

*Causes, Classification and Differential Diagnosis of Anemias: Based on Detailed Examination of Over Two Hundred Patients and Study of Literature. E. E. Osgood and H. D. Haskins, Portland, Ore.—p. 1367.

*Comparative Study of Use of Whole Liver, Liver Extract and Ventriculin. H. A. Freund and A. E. Price, Detroit.—p. 1377.

Raynaud's Disease Affecting Men. E. V. Allen and G. E. Brown, Rochester, Minn.—p. 1384.

Does Liver Therapy Benefit the Diabetic? E. L. Sevringhaus, Madison, Wis.—p. 1387.

*Primary Sclerosis of Pulmonary Artery: Report of Case. E. R. Pund and T. B. Phinizy, Augusta, Ga.—p. 1391.

*Gonococcal Endocarditis: *Summary of Literature and Report of Case.* A. M. Hoffman and F. C. Taggart, Los Angeles.—p. 1397.

*Significance of Lymphatic Tissue and Adenoma-Like Areas in Thyroid Gland. L. R. Himmelberger, Flint, Mich.—p. 1404.

*Pulmonary Lesions in Human Tularemia: Pathologic Review and Report of Fatal Case. S. D. Blackford, University, Va.—p. 1421.

Oliver Goldsmith, M.D. L. H. Roddis, Washington, D. C.—p. 1427.

Rheumatic Infections of Young Children.—McLean states that the early manifestations of rheumatic infections in children are characterized by an insidious onset. Such children are pale, easily fatigued, have poor appetites and are not gaining in weight as they should. Many complain of slight pains in the legs, feet or joints. There is often stiffness of the limbs or neck. Digestive disturbances with paroxysmal abdominal pains are common. There is a change in disposition. The children become irritable, nervous and peevish, and are easily frightened. Often there is a failure in mental concentration and they begin to drop objects and at times have difficulty in writing. There may be slight muscle twitching. Examination shows an anemic child who is irritable, nervous, excitable, high strung and usually underweight. The second heart sound is accentuated, with a soft blowing systolic murmur heard over the apex, that may or may not be transmitted. When the murmur is heard in a patient in whom it did not previously exist and is known to remain constant for at least a month, during which time the patient does not have elevation of temperature or acute infections, the diagnosis of a rheumatic infection is almost certain. Often no murmur is heard, but the heart action is rapid and the apex impulse exaggerated. The author emphasizes the fact that every child with early manifestations of rheumatic infections is a potential cardiac patient and should be managed accordingly.

Anemias.—Osgood and Haskins believe that the term "secondary anemia" should be discarded, as it is not sufficiently descriptive and anemias formerly grouped together under this term differ widely in etiology, symptomatology, blood changes and response to different types of therapy. An accurate diagnosis of the etiology is essential to the proper treatment of anemias. To facilitate this differential diagnosis, the authors present a table which gives the more important laboratory and clinical observations with the chief therapeutic indications in twenty-eight of the more important conditions that may cause or be confused with anemia. A cause for anemia may exist without the development of actual anemia, since it is possible for blood regeneration to keep pace with blood destruction or with hemorrhage. There are only three fundamental causes of anemia: deficient formation of red cells or hemoglobin, excessive destruction of red cells or hemoglobin within the body, and loss of red cells and hemoglobin from the body. These deserve more thorough study than they have previously received. Clinical anemias should be studied with the object of determining what is the relative part played by each of these fundamental factors in any individual case.

Whole Liver, Liver Extract and Desiccated Hog Stomach.—Freund and Price report a case of primary anemia which failed to respond to both desiccated hog stomach and liver extract but which later responded satisfactorily to the juice of whole liver. They draw attention to the fact that larger and increasing doses of antianemic substance were required to produce and maintain the desired blood level. It is suggested that in those cases which prove resistant to the usual "antianemic extracts," whole liver be given a trial. It is further suggested that large quantities of the antianemic substance be given before the case is considered refractory.

Primary Sclerosis of Pulmonary Artery.—On the basis of the history, clinical course and pathologic changes in a case they observed, Pund and Phinizy consider that the term primary sclerosis of the pulmonary artery is justifiably used. Such changes as were seen in the bronchi, lungs and heart were secondary to the sclerosis of the arteries. On some occasions the Wassermann reaction was positive, but syphilitic lesions were not found at necropsy and, although the necropsy was performed soon after death, Spirochaeta pallida was not found in the lungs or in the lesions of the arteries of the lungs. There was no significant etiologic factor brought to light in the history. The authors suggest that congenital hypertrophy of the media or faulty development may predispose the small pulmonary arteries to the obliterative changes that are observed in these cases.

Gonococcal Endocarditis.—Hoffman and Taggart summarize the literature on gonococcus endocarditis and review the eight authentic cases reported since 1922. To these they add another. The nine cases make a total of seventy-five proved cases of gonococcus endocarditis in the literature. The criteria of diagnosis are discussed. A positive diagnosis of gonococcal endocarditis can be made in the presence of clinical evidence of endocarditis only when intra vitam blood cultures are positive for gonococci or when cultures from postmortem lesions reveal the same organism.

Lymphatic Tissue in Thyroid.—It has been shown by Himmelberger that areas of lymphatic tissue occur in the thyroid in 2.8 per cent of infants. This tissue is found also in 2 per cent of thyroids from patients dying of diseases or accidents not involving the thyroid. Areas of lymphatic tissue occur in practically all thyroids removed surgically from patients with undoubted exophthalmic goiter. The lesion described is not the result of a local inflammatory reaction. The presence of lymphatic tissue in infant and selected necropsy specimens supports Warthin's contention of the existence of a "Graves constitution," that exophthalmic goiter is the clinical manifestation of a congenital constitutional anomaly. Warthin's conclusion that this lesion is diagnostic for exophthalmic goiter is vigorously supported. Adenomas have no causal relationship to the symptoms of thyroid disease since they occur with equal frequency in normal and pathologic glands. The use of the term should be abandoned in connection with the clinical diagnosis of hyperthyroidism. The author suggests a simple classification and diagnostic scheme of thyroid disease that is clinically and pathologically compatible.

Pulmonary Lesions in Tularemia.—Blackford reviews the reported effects of Bacterium tularense on the human lung and calls attention to the probable frequency and importance of these pulmonary manifestations. He presents a case with necropsy with the following observations of interest: 1. The probable source of the infection was an opossum. 2. The clinical diagnosis of pyogenic lung abscess was discredited by microscopic study of the tissue. 3. The pulmonary damage was extensive and of prime importance as a cause of death. 4. Multiple pulmonic thrombi, with attending areas of the necrosis, were probably attributable to the tularemic infection. 5. Gross caseous nodules were lacking in the liver and spleen.

Annals of Medical History, New York

4: *219-320* (May) 1932

How London and Edinburgh Influenced Medicine in Philadelphia in the Eighteenth Century: The S. Weir Mitchell Oration. F. R. Packard, Philadelphia.—p. 219.
Washington's Last Illness. F. O. Lewis, Philadelphia.—p. 245.
The Life and Times of Dr. William Harvey. W. Herringham, Hampstead, England.—p. 249.
Medicine in a Popular Medieval Encyclopedia. J. J. Walsh, New York.—p. 273.
St. Philip's Hospital in Charlestown in Carolina: Medical Care of the Poor in Colonial Times. J. I. Waring, Charleston, S. C.—p. 283.
Dr. Lydia Folger Fowler: Second Woman to Receive Degree of Doctor of Medicine in United States. F. C. Waite, Cleveland.—p. 290.
Pharmacology of Ancient Mexicans. D. Cerna, San Antonio, Texas.—p. 298.

Archives of Internal Medicine, Chicago

49: *713-878* (May) 1932

*Pain in Muscular Ischemia: Its Relation to Anginal Pain. T. Lewis, London, England.—p. 713.
*Auricular Fibrillation: Ambulatory Treatment with Quinidine. S. A. Weisman, Minneapolis.—p. 728.
Encephalopathy Due to Chronic Plumbism: Report of Case. T. S. Evans, New Haven, Conn.—p. 735.
Spontaneous Nephritis in Rabbit: Changes in Urine, Blood Metabolites, Phthalein Excretion and Blood Pressure in Group of Twenty Animals Followed for a Period of Three Years. F. R. Nuzum, A. H. Elliot and Blanche V. Priest, Santa Barbara, Calif.—p. 744.
Diagnosis of Syphilitic Aortitis Uncomplicated by Aortic Regurgitation or Aneurysm: Comparison of Clinical and Necropsy Observations in One Hundred and Five Patients. J. E. Moore, Baltimore; J. H. Danglade, Kansas City, Mo., and J. C. Reisinger, Washington, D. C.—p. 753.
Experimental Renal Insufficiency Produced by Partial Nephrectomy: I. Control Diet. A. Chanutin and E. B. Ferris, Jr., University, Va.—p. 767.
*Acute Bacterial Endocarditis Due to Bacterium Acidi-Lactici. L. Dickar, New York.—p. 788.
Effect of Histamine on Alkali Reserve and on Blood Sugar in Man. R. F. Hiestand, Cincinnati, and J. L. Hall, *Chicago.—p. 799.*
*Effect of Quinidine Sulphate in Inhibiting Ventricular Fibrillation: Experimental Study. H. D. Levine, Boston.—p. 808.
*Intrinsic Regulation of Gastric Acidity. S. L. Goldberg, Rochester, Minn.—p. 816.
Chemistry and Metabolism in Experimental Yellow Fever in Macacus Rhesus Monkeys: V. Acid-Base and Electrolyte Equilibrium. A. M. Wakeman and Clare A. Morrell, New York.—p. 826.
Proteolytic Leukocytic Enzyme in Leukemia: Study Made by Quantitative Method. Jean V. Cooke, St. Louis.—p. 836.
Chronic Gastric Ulcers: Histologic Observations on Factors Underlying *Healing of Lesions Produced Experimentally* in Rabbits. A. N. Ferguson, Chicago.—p. 846.
Correlation of Lingual Changes with Other Clinical Data. W. H. Oatway, Jr., and W. S. Middleton, Madison, Wis.—p. 860.

Pain in Muscular Ischemia.—Lewis states that if one accepts the idea that attacks of anginal pain are brought about by relative ischemia of the muscle, the relief of pain by nitrites may clearly come through a decrease of expenditure of energy, an increase of blood supply or by the joint effects of these two. On the basis of the theory of muscular ischemia, there is no difficulty in understanding why amyl nitrite fails to give relief in the pain of coronary occlusion. Similarly, in angina pectoris there is no difficulty in explaining why amyl nitrite may at times relieve pain without lowering the blood pressure, or why at other times the blood pressure may fall without relief until later. It is also easy to understand why, after the administration of amyl nitrite, the pressure may rise to a high point without causing pain, since the effects of increased coronary flow on the muscle may long outlast the action of the drug. Lastly, it enables one to explain on similar lines why attacks that would otherwise last ten minutes or more are brought to an abrupt and complete end by the inhalation, the direct effects of which are notoriously quite transient.

Auricular Fibrillation.—Weisman reports twenty-eight cases of auricular fibrillation in which the patients were treated with quinidine; four did not continue treatment, so that only twenty-four were treated satisfactorily by the ambulatory method. In seventeen cases, 70.8 per cent of the twenty-four in which treatment was satisfactory, normal rhythm was restored. Of the successfully treated patients, four had rheumatic valvular heart disease, ten had hypertension and coronary sclerosis, one had diabetes and hypertension, one had syphilitic aortitis, and one had an apparently normal heart. Eighteen of the twenty-four patients were 50 years of age or over; in fourteen of this group, or 77 per cent, the heart was restored to regular rhythm. In three of the remaining six patients, regular rhythm was restored. The group with hypertension seemed to respond more quickly than the rheumatic group. In all but one there was chronic fibrillation for from two months to ten or twelve years. In the treatment, small doses of quinidine were given to start with; then the dose was gradually increased. Tincture of digitalis was always given first or in conjunction with quinidine during treatment. Two accidents occurred during treatment: one death from coronary thrombosis and a case of hemiplegia.

Bacterial Endocarditis.—Two cases of Bacterium acidi-lactici endocarditis, closely resembling cases of infection with Bacterium coli, are reported by Dickar because of their rarity. He believes that more complete bacteriologic studies of cases of Bacterium coli sepsis will undoubtedly bring to light more examples of Bacterium acidi-lactici infections. The coincidence of aortic valve involvement in two cases of Bacterium acidi-lactici endocarditis and in two cases of Bacterium coli endocarditis is pointed out.

Inhibition of Ventricular Fibrillation.—In a series of thirty-six experiments performed on cats, Levine found that quinidine sulphate definitely inhibited the facility with which ventricular fibrillation could be produced by faradic stimulation. It was also found that this effect could not be attributed to manipulation of the heart and the resulting fatigue of the muscle or to the time consumed in the experiments. The author suggests that these results offer a rational background for proper quinidine therapy as a method of preventing sudden death in those conditions in which ventricular fibrillation is prone to occur.

Intrinsic Regulation of Gastric Acidity.—Goldberg presents experimental evidence to show that intragastric regulation of acidity is probably brought about by three factors: (1) reduction of the concentration of secreted hydrochloric acid when intragastric acidity has reached a certain level, and, as its corollary; (2) secretion of neutral chloride by the stomach, which plays a rather minor part by dilution, and (3) a combination of gastric mucin or an unknown substance with free acid.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

13: 261-316 (May) 1932

Use of Water in Therapeutics. J. B. Nylin, Philadelphia—p. 261.
Physical Therapy in Dermatology: Appraisal Based on Results in Practice. H. J. Parkhurst, Toledo, Ohio.—p. 272.
The Audiometer as an Aid in Diagnosis of Impaired Hearing. G. H. Mundt, Chicago.—p. 289.
Is Physical Therapy an "Adjunct" Only? O. M Moore, York, Neb.—p. 295.

Archives of Surgery, Chicago

24: 715-892 (May) 1932

*Sodium Amytal: Analysis of Intravenous Use in One Hundred and Seventy-Two Surgical Operations. H. Cabot, Rochester, Minn., and W. G. Maddock and H. Lamb, Ann Arbor, Mich.—p. 715.
*Pathogenesis of Hypernephroma. J. Gottesman, D. Perla and J. Elson, New York—p. 722.
*Pathogenic Gas-Producing Anaerobic Bacilli in Chronic Ulcers. M. H. Manson, Minneapolis.—p. 752.
*Acute and Subacute Atrophy of Liver and Evolution of Toxic Cirrhosis: Review of Twenty-Two Cases. E. S. Judd and D. C. Beaver, Rochester, Minn.—p. 775.
*Osteogenic Sarcoma. C. F Geschickter, Baltimore.—p. 798.
Avertin Fluid Anesthesia in Surgery. K. Schlaepfer and L. M. Peters, Milwaukee.—p. 868.
Forty-Seventh Report of Progress in Orthopedic Surgery. P. D. Wilson, M. Smith-Peterson, L T. Brown, J. G. Kuhns, E. F. Cave and S. M. Roberts, Boston; R. K. Ghormley, Rochester, Minn.; J. E. Milgram, New York; J. A. Freiberg, Cincinnati, and G. Perkins, London, England.—p. 881.

Sodium Amytal.—Cabot and his associates discuss the results they obtained by the intravenous use of sodium amytal in 172 surgical operations. As the drug was slowly injected, in from three to five minutes the patients passed gradually, quietly and surely into what appeared to be a normal deep sleep. No stage of excitement was observed. The pupils contract early and will not react to light. At first the patient can be aroused by a needle prick or shaking. As the administration is continued, these stimuli become less effective to a point simulating profound anesthesia. During the administration of sodium amytal the pulse rate increased in 124 cases an average of 15 a minute; in 25 cases there was an average decrease of 12 a minute; in 23 cases there was no change. In 100 cases the respiratory rate increased an average of 5.7 a minute; an average decrease of 4.3 a minute occurred in 31 cases. There was no change in 41 cases. The patient's color remained good if an effort was made to keep the upper respiratory passage unobstructed by holding up the jaw and inserting a breathing tube. A fall in blood pressure occurred in 166 cases during the administration of the drug, the average systolic reduction being 27 mm. of mercury, while the average diastolic reduction was 15 mm. Six cases showed a slight tendency toward increase in both systolic and diastolic pressures. There was distinctly less change in the patient's blood pressure if it was normal before the administration of the anesthetic, while persons with hypertension or hypotension showed a much greater reduction. The ordinary operative trauma was a decided stimulus to the return of the blood pressure to normal. As a routine the operation was started within from three to five minutes from the time of completion of the administration of the drug. Into the skin and parietal peritoneum a local anesthetic was usually injected before incision. No inhalation anesthetic was given until requested by the surgeon because of (1) occasional poor relaxation, (2) a tendency for the patient to squirm under the stimulus of the incision, or (3) handling of the viscera. Sodium amytal alone was entirely satisfactory in 42 of the cases. In 21 cases of this group, major abdominal operations were performed. The intestine appeared to be collapsed and could be packed away from the operative field with more than the usual ease. Exposure was ideal. There was no increased tendency toward bleeding or oozing. Facilities for closure were perfect. The effect lasted well beyond the average time for the operation. The remaining 130 cases required an additional anesthetic agent. On the basis of their observations the authors draw the following conclusions: 1. Sodium amytal given intravenously is a satisfactory addition to the anesthetic armamentarium. 2. It is an exceedingly agreeable form of anesthetic from the patient's point of view. 3. In consideration of the fact that 75 per cent of the patients required an additional anesthetic, the authors raise the question as to whether smaller doses of sodium amytal plus the additional anesthetic would not be just as satisfactory as their nearly maximal dose. This would effect a decrease in the length of time of postoperative narcosis and its consequent possible complications.

Hypernephroma.—Gottesman and his associates present an analysis, from a clinical and pathologic point of view, of forty-four cases of hypernephroma. In sixteen of these, the tumor was a chance observation at necropsy. The authors state that the neoplasm may exist for many years prior to the onset of symptoms. There is extreme variation in the interval between the onset of symptoms and the death of the patient from the neoplasm. In about half of the cases the primary symptoms of neoplasm were referable to metastatic lesions, such as those of the pelvis, skull, long bones, vagina and lungs. The existence of a primary malignant neoplasm of the kidney with metastatic foci may exist for some time prior to the development of any symptoms. All gradations from a benign structure to a malignant hypernephroma were found in the same tumor. All types of histologic variations may occur in the same tumor, such as a cortical adenoma, a typical hypernephroma, papillary and adenomatous forms and highly malignant carcinoma and sarcoma-like infiltrations. Comparative studies emphasize the histogenetic development of a hypernephroma from cortical aberrant tissue. Cortical suprarenal rests in the kidney may grow into benign adenomas. At any period during the life of the patient, such benign structures may become malignant. This development and subsequent metastatic dissemination proceeds at a variable rate.

Anaerobic Bacilli in Chronic Ulcers.—Manson reports two cases in which gas gangrene followed amputation of extremities that were the site of chronic ulcers. Their similarity led to the question of the relationship of chronic ulcers and gas gangrene and the frequency with which ulcers harbor pathogenic anaerobes. Cultures of thirty-two ulcerating lesions revealed that eleven, or 34.37 per cent, harbored pathogenic gas-producing anaerobes. Fifty-two control cultures of normal skin yielded four cultures (7.6 per cent) of Clostridium welchii. Clostridium welchii is the most frequent pathogenic anaerobe found in chronic ulcers. Gas gangrene complicating preexisting gangrene has previously been emphasized, and it is suggested that vigilance be extended to include chronic ulcers as a possible source of gas gangrene following surgical intervention. The possible routes of infection are discussed and it is believed that the most likely explanation is that the organisms were in the tissues prior to amputation. This opinion is speculative and requires definite evidence to corroborate it. Polyanaerobic and Bacillus perfringens antitoxin has definite merit and should be more widely used. The author suggests that cultures should be taken of chronic ulcerating lesions, by the use of milk as a medium, if surgical intervention is to be directed to their removal. If the characteristic stormy fermentation produced by Clostridium welchii is obtained, anaerobic antitoxin should first be administered.

Atrophy of Liver.—Clinical and pathologic study made by Judd and Beaver of twenty-two cases of atrophy of the liver revealed a common pathogenesis but probable widely differing etiology. The lesion begins in relatively rapid atrophy of the liver, and, according to severity and rapidity of the atrophy and associated changes, may be revealed as an anatomically acute, subacute or chronic lesion. Progression into the chronic stage is dependent not only on a relatively less severe destruction of hepatic parenchyma but on the capacity of the hepatic cells to regenerate. The clinical course of the disease is frequently impossible of pathologic correlation, owing to the somewhat latent appearance of the clinical manifestations; however, in a general way the disease exhibits gradations in symptomatic severity and duration similar to those suggested by the pathologic anatomy of the liver. The most constant symptom presented in these cases is jaundice. Ascites is somewhat latent in its development but is usually shown when the lesion has reached chronicity. The occurrence of pain in the course of this disease, simulating colic originating in obstruction from biliary calculi, has been emphasized. By far the greater number of patients live to reach the clinically and anatomically subacute and early chronic stages. Death from acute hepatic atrophy, so far as pathologic anatomy reveals it to be acute, is exceedingly rare. In some cases, the end or healed stage of the lesion is reached; this stage presents the characteristics of the type of cirrhosis that Mallory has designated "toxic cirrhosis."

Osteogenic Sarcoma.—Geschickter believes that the current conception of the typical sarcomatous history given by patients with malignant disease of the bone is in need of definite revision. A youthful patient and a brief acute clinical course are not indispensable to the diagnosis, and it can no longer be maintained that a prolonged history and advanced age rule out this dread disease. It has been shown that there are definite types of osteogenic sarcoma which arise in adults who may give a history of a preceding trauma dating back from two to twenty-five years. These are cases of secondary chondromyxosarcoma arising at the site of an exostosis or benign central chondroma, the osteolytic sarcoma which arises centrally in adults with an obscure complaint at the site of the malignant change, or the secondary sclerosing forms following on myositis ossificans and in callus after fracture. In these cases the unusual clinical aspects can be explained on the basis of a sarcoma arising from a previously benign condition, which either harbors undifferentiated embryonic tissue or is the seat of a chronic unhealed lesion. The clinician, therefore, must be on the lookout for these secondary malignant forms of osteogenic tumors, which in the roentgenograms are central bone-destructive lesions of an infiltrative type (arising in a bone which gives evidence of a previous exostosis, an expansile deformity caused by central chondroma or an old unhealed site following infection or trauma) or invasive periosteal growths (following on Paget's osteitis deformans, myositis ossificans or callus formation). While these tumors are definitely sarcomatous, they offer a better prognosis than the primarily malignant osteogenic tumors and, in grading, constitute a distinct group. The fundamental basis of interpreting lesions of the bone in the roentgenogram is also in need of revision. There is too much overlap in the roentgenologic picture between benign and malignant conditions if one looks on the film as presenting only the configuration of the result of the disease process. It is necessary to pass beyond the reliance placed on mere configuration and analyze the film as a dynamic record of both normal osteogenesis and a malignant perversion of some phase of this osteogenesis. The fact that osteogenic sarcoma may sometimes give rise to a central osteolytic lesion in the roentgenogram and in other instances sclerose the marrow cavity, that under certain conditions it may be predominantly a periosteal lesion and again be predominantly central, emphasizes the necessity of interpreting the roentgenogram in relation to the phase of osteogenesis involved by the tumor rather than attributing these contrasting pictures to chance or to an indefinable complexity.

California and Western Medicine, San Francisco

36: 305-376 (May) 1932

Activities of California Medical Association During 1931: Address of Retiring President. J. B. Harris, Sacramento.—p. 305.
Correction of Losses and Deformities of External Nose, Including Those Associated with Harelip. V. P. Blair, St. Louis.—p. 308.
*Abdominal Section, with Preservation of Diaphragmatic Function and Without Postoperative Pain or Adhesions. J. F. Percy, Los Angeles. —p. 314.
Sodium Amytal: Its Value in Seasickness. H. Hamilton, Honolulu, Hawaii.—p. 317.
What to Eat on Going to Bed. L. L. Stanley and G. L. Tescher, San Quentin —p. 318.
Fractures of the Os Calcis. M C. Harding, San Diego.—p. 319.
Favus in California: Report of Case Due to Strain Pathogenic for Mice. S. C. Way, San Francisco, and F. D. Weidman, Philadelphia.—p. 322.
Chronic Kidney Infections in Infants and Children: Report of Cases. W. M. Happ, Los Angeles.—p. 326.
Coronary Sclerosis: As Seen in Coroner's Office. A. A. Berger, San Francisco.—p. 332.
Free Skin Grafts of Less Than Full Thickness: Causes for Their Failure or Success. J. H. Woolsey, San Francisco.—p. 334.
Preoperative Medication. Caroline B. Palmer, San Francisco.—p. 337.
Essays on the History of Embryology. A. W. Meyer, San Francisco. —p. 341.

Abdominal Section.—Percy emphasizes the importance of preventing, while the abdomen is open, the slowing up of the circulation in the posterior abdominal and thoracic veins, thus inevitably disabling the heart. He believes few surgeons realize sufficiently that the instant air is let into this visceral cavity the rhythmic respiratory contractions of the abdominal muscles and the diaphragm, which play such an important part in the circulation of the blood, are lost. Under such conditions, and especially if the operation is prolonged, blood accumulates in the great posterior abdominal and thoracic veins because these two most important and efficient circulatory muscular units go out of commission with the opening of the abdomen. When the heart has lost this almost indispensable support it gradually becomes fatigued and the circulation fails. At this point one frequently finds the anesthetist attempting to whip it into better action with heart stimulants, often with disappointing if not disastrous results. The technic necessary for preserving the circulatory functions of the diaphragm and of the abdominal muscles following the opening of the abdomen is extremely simple. The essential thing is the employment of a single long, dry gauze sponge to keep the liver and surrounding viscera crowded up under the dome of the diaphragm. (The sponge or pack is made from ordinary surgical gauze. The author has found that a useful average as to length is 15 yards, or 13.72 meters, with a width of 9 inches, or 23 cm. The latter is obtained by folding the gauze lengthwise four times). When well done, this compensates for the removal of the tone of the abdominal wall. Important as subsidiary aids to the sponge technic is adequate spinal anesthesia with an added general anesthesia when relaxation of the abdominal muscles is not satisfactory, the Trendelenburg position and a completely expanded long abdominal incision. The correct manner of introducing the sponge into the upper part of the abdomen is the key to its value. Not only does it serve as a pack in restoring the auxiliary circulatory functions of the diaphragm and abdominal muscles, but also, when placed without traumatizing the peritoneum in the slightest degree, it precludes the development of gas pains and the later dreaded adhesions.

Florida Medical Association Journal, Jacksonville

18: 497-546 (May) 1932

President's Address. G. H. Edwards, Orlando.—p. 505.

Georgia Medical Association Journal, Atlanta

21: 177-218 (May) 1932

Economic Drift of Modern Medicine. A. G. Fort, Atlanta.—p. 177.
Ritter's Disease: Dermatitis Exfoliativa Infantum: Keratolysis Neonatorum: Case Report. B. C. Teasley, Hartwell.—p. 180.
Plastic Operation for Anal Incontinence. L. Grove, Atlanta.—p. 182.
Surgery in Diabetes. F. A. Smith, Elberton.—p. 184.
Polycystic Kidney Disease: Report of a Familial Series. E. A. Bancker, Jr., Atlanta.—p. 187.
Chronic Purulent Otitis Media. J. A. Smith, Macon.—p. 190.
Cesarean Section: Case Reports. C. E. Wills, Washington.—p. 193.
Paroxysmal Ventricular Tachycardia: Case Treated with Quinidine Sulphate. W. C. Waters, Jr., Atlanta.—p. 194.
Surgical Treatment of Pulmonary Tuberculosis. L. Fort, Atlanta.—p. 196.
Paranasal Sinus Infection: Lower Respiratory Tract Manifestations. T. S. Burgess, Atlanta.—p. 199.

Journal of Allergy, St. Louis

3: 325-422 (May) 1932

Study of Calcium, Phosphorus and Potassium of Serum and Spinal Fluid in Asthma. D. M. Lierle and R. A. Sage, Iowa City.—p. 325.
*Recent Observations in Study of Asthma Due to Food Allergy. A. V. Stoesser, Minneapolis—p. 332.
Allergically Active Substance in Pollen: Chemical and Biologic Study of Phleum Pratense (Timothy) Pollen. A. Stull, R. A. Cooke and R. Chobot, New York.—p. 341.
*Biologic Identity of Certain Grass Pollens Causing Hay Fever. A. Stull, R. A. Cooke and J. H. Barnard, New York.—p. 352.
Ragweed Season of 1931: Third Annual Atmospheric Survey. O. C. Durham, North Chicago, Ill.—p. 357.
Physical Allergy: Localized and Generalized Allergic Type of Reaction to Cold: Case. G. W. Bray, London, England.—p 367.
Botanic Survey of San Joaquin County in Central California. A. H. Rowe, Oakland, Calif.—p. 375.
Asthma Due to Mold: Hypersensitivity Due to Cladosporium Fulvum, Cooke: Case Report. H. M. Cobe, Philadelphia.—p. 389.
Importance of Medical Social Service in Asthma Clinics. W. C. Spain, New York.—p. 392.
Climatic Asthmas. C. Jimenez-Diaz, B. S. Cuenca and J. Puig, Madrid, Spain.—p. 396.
*Dermatitis Venenata Due to Chrysanthemums: Report of Case in a Florist. I. Pilot, Chicago.—p. 404.
Treatment of Physical Allergy: Treatment of Heat and Effort Sensitiveness and Cold Sensitiveness and Treatment of Contact Urticaria Caused by Light, Cold and Scratches. W. W. Duke, Kansas City, Mo.—p. 408.

Asthma Due to Food Allergy.—An allergic individual responding to the ingestion of codfish with an asthmatic reaction was kept by Stoesser under close observation for a short time. It was noted that, when the patient was on a ketogenic diet with a fair amount of fluid intake, no protection against the asthmatic attacks was obtained. A high carbohydrate diet gave little protection. When the water intake was low in connection with the ketogenic diet, the reaction was worse and the same was true in the case of the high carbohydrate diet. When the patient was on a high fluid intake in connection with the relatively high carbohydrate diet, full protection was obtained while the patient was up and about indoors, but this failed when the patient became quite active outdoors, and later an infection of the upper respiratory tract developed. The administration of a solution of dextrose was just as effective in controlling the allergic reactions in this case as epinephrine. Severe asthmatic attacks required intravenous injections of dextrose, while the mild attacks could be taken care of with dextrose, which was given orally. The effect of dextrose is most interesting in that epinephrine, which has long been used to control allergic reactions, also raises the blood sugar.

Grass Pollens Causing Hay Fever.—Stull and his associates report that the results of experiments together with an extensive clinical experience of fourteen years in the treatment of grass pollen sensitive cases with timothy extract alone led them to believe that in all respects the active substance of these grass pollens is a single substance and is common to all the extracts.

Dermatitis Venenata Due to Chrysanthemums.—Pilot reports a case of dermatitis venenata due to chrysanthemums (pompons). The leaves were largely the irritating factors. By patch test the other soluble fraction of the leaves gave positive reactions. The water soluble fraction containing most of the protein gave no reaction. Passive transfer was unsuccessful. The author states that dermatitis venenata due to chrysanthemums is an example of marked skin sensitiveness, such as is observed in rhus and primrose dermatitis.

Journal of Industrial Hygiene, Boston

14: 159-206 (May) 1932

*Effects of Prolonged Exposure to Sulphur Dioxide. R. A. Kehoe, W. F. Machle, K. Kitzmiller and T. J. LeBlanc, Cincinnati.—p. 159.
Cadmium Poisoning: II. Experimental Cadmium Poisoning. L. Prodan, Boston.—p. 174.
Reactions of the Organism to Repeated Electric Shocks. O. R. Langworthy and W. B. Kouwenhoven, Baltimore.—p. 197.

Exposure to Sulphur Dioxide.—Kehoe and his associates found a significantly higher incidence of nasopharyngitis, both chronic and slight, of alteration in sense of smell and sense of taste, and of increased sensitivity to other irritants in a group of workers exposed to sulphur dioxide. These may be thought of as conditions arising from local irritation. A significantly higher incidence of abnormal urinary acidity, of tendency to increased fatigue, of shortness of breath on exertion, and of abnormal reflexes was found in the exposed group. These are in the nature of systemic symptoms. There was no demonstrable association between frequency or severity of initial symptoms and frequency of heavy exposure, nor was there any relation between exposure and the frequency and severity of symptoms arising from the customary exposure. A positive relation exists between frequency of heavy exposure and presence of certain symptoms indicative of acid accumulation; namely, increased fatigability during the period of employment, and shortness of breath on exertion. The incidence of colds is not significantly different in the two groups. The duration, however, is extended in the exposed group. In all other respects there was no significant difference between the exposed group and a control group.

Journal of Lab. and Clinical Medicine, St. Louis

17: 731-842 (May) 1932

Respiration of Micro-Organisms. F. G. Novy, Ann Arbor, Mich.—p. 731.
*Comparative Statistical Study of Frequency of Asymptomatic Ringworm as Occurring in More Common Cutaneous Affections. A. Strickler and R. P. Zalatel, Philadelphia.—p. 748.
*Carbohydrate in Treatment of Postoperative Tetany, with Especial Reference to Lactose. E. P. McCullagh and D. R. McCullagh, Cleveland.—p. 754.
Comparison of Vasoconstrictive Action of Adrenalin and Ephedrine Added to Local Anesthetic Solution. W. R. Meeker, Mobile, Ala.—p. 773.
Studies in Serology of Syphilis: VII. Supposed Artificial Induction of Positive Wassermann Reaction in Originally Negative Human Serums. H. Eagle, Baltimore.—p. 778.
Id.: VIII. New Flocculation Test for Serum Diagnosis of Syphilis. H. Eagle, Baltimore.—p. 787.

Frequency of Asymptomatic Ringworm.—Strickler and Zalatel examined 185 patients with various skin diseases for the presence of ringworm fungi in the interspaces of the feet, both by the extemporaneous method and by culture on Sabouraud's medium. Of this number, 92, or 49 per cent, were proved positive for fungi on microscopic examination and 93, or 51 per cent, negative. Only in 4 instances, or 2 per cent, could a positive ringworm growth be obtained on Sabouraud's medium. Forty-five patients with acne vulgaris were studied. Of this number, 27, or 60 per cent, were negative for fungi by the extemporaneous method, while 18, or 40 per cent, were positive. Out of the 45 there was only 1 case which gave a positive ringworm growth on Sabouraud's medium. Fourteen patients with eczema were studied with the following results: Three, or 22 per cent, were positive for fungi by the microscopic method, and 11, or 78 per cent, were negative. All failed to give a ringworm growth on Sabouraud's medium. Eight patients with either psoriasis or lichen planus were studied, and of this number 12.5 per cent showed positive microscopic observations and 87.5 per cent negative results. Ten patients with seborrheic dermatitis were examined. Of this number 5, or 50 per cent, were positive for fungi by microscopic examination and 5, or 50 per cent, negative. All failed to yield positive cultures on Sabouraud's medium. Patients with various forms of dermatitis, scabies or tumors showed about an equal proportion of positive and negative microscopic observations. While the general average of positive fungus observations by microscopic examination was 49 per cent for the entire series, the eczema group yielded only 20 per cent positive results, acne vulgaris 40 per cent, but the seborrheic dermatitis group gave 50 per cent positive. Although this series is rather small on which to base definite conclusions, it would appear that the eczema patients seem to offer the least favorable soil for asymptomatic epidermophytosis and seborrheic dermatitis patients the most favorable environment. An important lesson to be drawn from this study is the need for a test, cutaneous or otherwise, through which the potential, latent pathogenic powers of the fungi of asymptomatic ringworm fungus infection could be determined. By such a method it would also be possible to reconcile the discrepancies between the cultural and microscopic observations in asymptomatic mycosis.

Postoperative Tetany.—The McCullaghs report that the symptoms of chronic parathyroid tetany may be lessened in severity or completely controlled by lowering the amount of inorganic phosphates in the blood without raising the total calcium content of the blood serum. Dextrose temporarily lowers the amount of inorganic phosphates in the blood of normal subjects and in individuals with chronic parathyroid tetany. Lactose in single doses has the same effect as dextrose. Galactose in single doses has no effect on the inorganic phosphate content of the blood. After ingestion of dextrose or of lactose there is a decrease in the amount of phosphate excreted in the urine. This does not occur after the administration of galactose. Three cases of chronic parathyroid tetany are reported in which symptoms were present in spite of the oral administration of large doses of calcium lactate. The addition of lactose resulted in complete relief, associated with a lowering of the phosphate content of the blood. One case of chronic parathyroid tetany is reported in which large doses of calcium lactate alone failed to give complete relief and very large doses of parathyroid extract alone failed to give relief. The symptoms could be controlled by the oral administration of large doses of calcium lactate, together with the subcutaneous injection of parathyroid extract. Calcium lactate in large doses in combination with lactose gave relief without the addition of parathyroid extract.

Journal of Nutrition, Springfield, Ill.

5: 213-324 (May) 1932

Effects of Low Environmental Temperature on Metabolism: I. Technic *and Respiratory Quotient.* R. W. Swift, Rochester, N. Y.—p. 213.
*Id.: Influence of Shivering, Subcutaneous Fat, and Skin Temperature on Heat Production. R. W. Swift, Rochester, N. Y.—p. 227.
Some Effects of Restricted Protein Intake on Estrous Cycle and Gestation in Rat. H. R. Guilbert and H. Goss, San Francisco.—p. 251.
Method of Determining Biologic Value of Protein in Study of Avian Nutrition. J. L. St. John, O. Johnson, J. S. Carver and S. A. Moore, Pullman, Wash.—p 267.
*Utilization by Human Subjects of Nitrogen, Calcium and Phosphorus of Navy Bean (Phaseolus Vulgaris) With and Without Supplement of Cystine. Martha S. Pittman, Chicago.—p. 277.
*Value of Some Vegetables in Nutritional Anemia. H. Levine, F. B. Culp and C. B. Anderson, Charleston, S. C.—p. 295.
Relative Quantities of Heat-Stable and Heat-Labile Fractions of Vitamin B in Raw and Evaporated Milk. L. T. Samuels and F. C. Koch, Chicago.—p. 307.

Effects of Low Temperature on Metabolism.—From a study of the data obtained on twenty-one human subjects in a basal condition, exposed to an environmental temperature of about 2 C. for an hour and a quarter, Swift draws the following conclusions: 1. There is no change in the protein metabolism corresponding to the increase in energy metabolism. 2. The blood sugar level remains unchanged, indicating that increased epinephrine secretion is not involved. 3. There is no parallelism between the energy metabolism and pulse rate or respiratory rate, but distinct parallelism between heat production and respiratory volume. 4. The reaction to cold in a general way varies inversely as the amount of subcutaneous fat. 5. The increase in energy metabolism considered with the time spent in shivering shows that intense shivering increases the metabolism about 400 per cent. 6. The increase in metabolism shows no relationship to surface area. 7. The heat production is proportional to the amount and the intensity of shivering, and any increase in metabolism not accompanied by definite shivering may be justly ascribed to increased muscular tension. 8. The stimulus for shivering does not consist of even a slight drop in body (rectal) temperature. 9. Shivering begins when the skin attains a temperature of approximately 19 C. (66.2 F.).

Utilization of Nitrogen, Calcium and Phosphorus of Navy Bean.—Pittman reports the results of a study of the utilization of the nitrogen, calcium and phosphorus of the navy bean. Five adult women served as subjects. The beans were cooked in two ways—as bean purée and baked beans. They were eaten with and without a supplement of cystine in the proportion of 2 per cent of the weight of the calculated protein. The diet—consisting of beans, purified butter fat, sucrose, lactose, grape juice and lemon juice—was presumably adequate except for some deficiency of vitamin D. The following tendencies were observed: The trend of the nitrogen balance was increasingly negative while the beans were eaten without the cystine supplement. Addition of cystine in the proportions mentioned, although showing some irregularities, apparently improved the nitrogen retention slightly. The calcium and phosphorus of navy beans in the amounts used were, as a rule, unable to maintain the balance of these elements in the body. The phosphorus was utilized somewhat better than the calcium and showed a slightly favorable response to addition of cystine. Improved utilization of the phosphorus in most cases appeared to parallel better retention of nitrogen. No such correlation was noted between calcium and nitrogen or calcium and phosphorus. The methods of cooking used apparently had little effect on the usage of the elements studied. Navy beans seemingly can be eaten in comfort by healthy people in quantities at least as large as 4 ounces, dry weight, daily. The author concludes that her work on human subjects appears to support the observations of others that navy beans are not entirely satisfactory as the chief source of nitrogen in the diet.

Vegetables in Nutritional Anemia.—Levine and his associates studied the influence of various dried vegetables in the cure of nutritional anemia. They noted that dried spinach, when fed ad libitum and yielding an average daily intake of 0.43 mg. of iron and 0.0061 mg. of copper, effected hemoglobin regeneration in from three to four weeks. Lettuce plus tomato mixture, asparagus, lettuce, spinach and broccoli—all fed at a level affording 0.2 mg. of iron but different amounts of copper—permitted hemoglobin regeneration in from four to five, five to six, six to seven, six to seven and seven to eight weeks, respectively, in the order of decreasing copper intake. Since variations in the iron and copper content of these vegetables are known to exist, it is to be borne in mind that a different order of antianemic potency would probably result from another set of the same vegetables. Turnip greens fed at a level furnishing 0.425 mg. of iron and 0.0179 mg. of copper brought about rapid regeneration in from three to four weeks. When fed at the same level of iron, a lettuce and tomato combination was found more effective than lettuce alone. These vegetables are therefore important sources of the minerals concerned in normal blood formation. Iron alone or copper alone, when fed in the form of inorganic salt solutions, permitted only partial blood regeneration, whereas solutions containing both iron and copper effected rapid recovery of hemoglobin.

Journal of Pharmacology & Exper. Therap., Baltimore

45: 1-119 (May) 1932

Preliminary Observations with Theophylline Mono-Ethanolamine. A. L. Chen, Indianapolis.—p. 1.
Mechanism of Ovulation in Rabbit: IV. Quantitative Observations on Action of Extracts of Urine of *Pregnancy.* M. H. Friedman, Philadelphia.—p. 7.
Purification and Some Properties of Insulin. T. D. Gerlough and R. W. Bates, New Brunswick, N. J.—p. 19.
Effect of Barium Chloride on Salivary Secretion. G. W. Stavraky, Montreal, Canada.—p. 53.
Studies on Coronary Arteries of Human Heart. W. B. Kountz, Cairo, Egypt —p. 65.
Intact Intestine in Nonanesthetized Dogs as Influenced by Colocynth and Podophyllin. C. M. Gruber, L. K. Richardson and W. T. K. Bryan, St. Louis.—p. 77.
*About the Fate of Free Iodine on Application to Unbroken Animal Skin: Experimental Study. W. Nyiri and Marie Jannitti, Newark, N. J.—p. 85.
Note on Absorption, Serum Concentration and Narcotic Effects of Magnesium. E. Neuwirth and G. B. Wallace, New York.—p. 109.
Action of Certain Drugs on Oviduct of Domestic Fowl. F. D. McKenney, H. E. Essex and F. C. Mann, Rochester, Minn.—p. 113.

Fate of Iodine on Application to Skin.—Nyiri and Jannitti consider the fate of free iodine on application to the unbroken animal skin. The experiments were made on rabbits and dogs and gave the following results: 1. Free iodine penetrates through the unbroken skin. This penetration takes place only in the form of compounds. Iodine on external application was detected in the urine of dogs, on the inner surface of the pouched rabbit skin, and in the efferent blood vessels of the perfused isolated rabbit ear. 2. Quantitative experiments made on rabbits concerning penetration, absorption and evaporation of iodine offer a fair conception concerning the fate of iodine applied to the surface of animal skin. Approximately 88 per cent of the iodine evaporates from the *surface within three days. The rate of evaporation is highest* within the first few minutes after application. Within the first two hours, 50 per cent of the material escapes into the *air; at the end of twenty-four hours the loss amounts to about* 75 to 80 per cent; only small amounts evaporate during the third day. The evaporation ceases after this time. The rest, approximately 12 per cent, is at the disposal of the body and penetrates through the skin. The removal of this 12 per cent into the body is very gradual. Only 1 to 4 per cent is absorbed within the first few hours. The rest forms a depot in the skin from which about 5 to 6 per cent is taken up within three days. The remaining 3 to 5 per cent is gradually absorbed after this time. 3. Following application to the skin of the dog, from 1 to 3 per cent of iodine is excreted in the urine within three days. Although this percentage is very low, it suggests that the fate of iodine in the dog is similar to that in the rabbit, considering the slow rate of urinary excretion following various modes of administration, and the *marked iodine storing power of the body. 4.* The percentage of iodine penetration through the skin is the same, irrespective of whether the cells have a high or low vitality, or are dead, and irrespective of the direction of penetration. Activity of the cells, therefore, does not seem to be indispensable for the penetration of iodine. 5. The fate of iodine in all the experiments was the same whether iodine was applied to the skin in the form of an alcoholic solution or in colloidal suspension. 6. When the isolated ear and isolated kidney of rabbits are perfused at a moderate rate with a solution containing free iodine, the iodine is quantitatively reduced to iodides. The data presented by the authors serve as experimental evidence for the penetration of iodine through the unbroken animal skin.

New England Journal of Medicine, Boston

206: 1027-1074 (May 19) 1932

*Roentgenologic Consideration of Mitral Heart Disease. W. D. Reid and G. Levene, Boston.—p. 1027.
Doctor, Medical Society, Layman and State. D. Cheever, Boston.—p. 1032.
Epidermophytosis (Athlete's Foot): A Cause of Serious Streptococcal Infections. J. Homans, Boston.—p. 1038.
Large Cyst of Orbit: Case Report. J. W. Crawford, North Adams, Mass., and E Kellert, Schenectady, N. Y.—p. 1041.
Report of Progress in Orthopedic Surgery. W. A. Rogers, Boston.—p. 1043.

Mitral Heart Disease.—Reid and Levene state that while early mitral disease is often difficult of recognition clinically, it frequently may be identified by careful roentgen examination. In mitral stenosis an altered relationship of auricular and ventricular areas is a typical and diagnostic roentgenographic sign. Mitral insufficiency can be demonstrated by roentgen examination, and the organic and functional forms differentiated. Roentgen examination affords accurate information concerning the course of mitral disease under treatment.

Northwest Medicine, Seattle

31: 209-262 (May) 1932

Are We Up to Date in Our Treatment of Burns? H. J. Clements, Salem, Ore.—p. 209.
*Friedman Pregnancy Test. A. Mathieu, A. Palmer and A. Holman, Portland, Ore.—p. 215.
Eclampsia: *Modern Methods* of Treatment. S. S. Jones, Tacoma, Wash.—p. 220.
Incarcerated Gangrenous Ovarian Cyst Complicating Pregnancy and Labor. E C. Braddock, Lewiston, Idaho.—p. 223.
Pilocarpine as Remedial Agent in Alcoholic Amblyopia. R. W. Perry, Seattle.—p. 224.
*Significance of Uveal Inflammation. F. A. Kiehle, Portland, Ore.—p. 226.
Unilateral Exophthalmos Complicating Nasal Sinus Disease in Infancy. S. Bozarth, Portland, Ore.—p 230.
Chronic Sinus Infection in Relation to Systemic Disease. N. W. Jones, Portland, Ore.—p. 232.
Present Status of Accessory Sinus Disease. R. A. Fenton, Portland, Ore.—p. 234.
Chronic Antral Infection. L. E. Patrick, Seattle.—p. 238.
Chronic Sinus Diseases: Their Dietetic Treatment. E. V. Ullmann, Portland, Ore.—p. 240.
Cerebral Vascular Syndromes. C. J. Rohwer, Seattle.—p. 245.

Friedman Pregnancy Test.—Mathieu and his associates describe the technic of the Friedman test for pregnancy. Their results with the test in a relatively small series of cases (110) have been highly gratifying. The test is exceedingly valuable in distinguishing early pregnancy and in distinguishing pregnancy in abnormal conditions. The test was positive in a case of tubal pregnancy of four months' duration, in which the diagnostic difficulties were great and in which a living fetus was found at operation. From the technical standpoint the advantages of the Friedman test are many, among which are the relative low cost, the saving of time in making the test, the ease in procuring a suitable animal at all times, and the easily readable signs of a positive reaction.

Uveal Inflammation.—According to Kiehle, the significance of uveal inflammation lies in the possible far reaching and serious consequences of ciliary congestion. Continued or repeated dilatation of the vessels in this highly vascular area results in alterations in the vessel walls and consequent changes in the dialyzed fluids. This alteration in the nutritive elements, supplied the lens and the anterior segment of the eye, in turn necessarily produces changes in their structure and in the manner in which they perform their function. The region of the limbus is so constructed that it may yield readily to intraocular pressure with resultant change in refraction of the eye. When the scleral tissue fails to yield to this pressure, the effect is registered in various symptoms of asthenopia. The causes of ciliary congestion are doubtless exceedingly numerous and as yet no satisfactory classification has been established. It is possible that the causes are so complex as not to lend themselves to any simplified grouping. Serious consequences from inflammation of this region are easily possible, so that painstaking study is demanded. In this study, the slit lamp has been found to be of great assistance.

Ohio State Medical Journal, Columbus

28: 313-400 (May) 1932

Importance of Supplementing Clinical with Laboratory Observations in Pulmonary Tuberculosis. C. A. Doan, B. K. Wiseman, S. T. Mercer and M. D. Miller, Columbus.—p. 333.
Swelling of Eyelids in Patients with Hypothyroidism. H. B. Weiss and C. King, Cincinnati.—p. 341.
Evaluation of Tonsils. J. G. Kramer, Akron.—p. 344.

Oklahoma State Medical Assn. Journal, Muskogee

25: 183-220 (May) 1932

Urinary Tract as a Focus of Infection in Arthritis. B. A. Hayes, Oklahoma City.—p. 183.
Cysts of Upper Abdomen, with Especial Reference to Some Points in Differential Diagnosis. W. P. Neilson, Enid.—p. 185.
Malformations of Uterus and Vagina: Report of Case. R. N. Holcombe, Muskogee.—p. 189.
Hodgkin's Disease: Report of Case. E. H. Coachman, Muskogee.—p. 192.
Glossopharyngeal Neuralgia: Case Report. F. S. Clinton and B. W. Ward, Tulsa.—p. 194.
Relation of Obstetrics and Pediatrics to Dentistry. C. E. White, Muskogee.—p. 197.
Focal Infection from Dental Standpoint. G. L. Dodson, Muskogee.—p. 199.
Some Diseases and Conditions Most Frequently Mistaken for Pulmonary Tuberculosis. R. L. Hickman, Clinton.—p. 201.

Philippine Journal of Science, Manila

48: 1-127 (May) 1932. Partial Index

Studies on Experimental Creeping Eruption in the Philippines. C. M. Africa, Manila.—p. 89.
Study on Philippine Strain of Leptospira Icterohemorrhagiae. H. Hirano, Manila.—p. 103.
Observations on Possible Transmission of Surra by the Land Leech Haemadipsa Zeylanica. M. A. Tubangui, Manila.—p. 115.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

40: 225-278 (May) 1932

Surgical Aspects of Treatment of Mental Defectives, Sexual Perverts and Criminals. H. G. Wetherill, Monterey, Calif.—p. 225.
Mesenteric Vascular Occlusion: Report of an Unusual Case. A. S. Lobingier, Los Angeles.—p. 231.
The Prevention of Phlebitis. E. W. Rockey, Portland, Ore.—p. 236.
Teratoma Testis Diagnosed from Early Remote Metastasis: Case. T. E. Gibson and H. R. Arnold, San Francisco.—p. 241.
Indirect Inguinal Hernia in Children. H. E. Coe, Seattle.—p. 248.
Ectopic Gestation: Clinical Study with Notes on Treatment and Value of Autotransfusions. G. K. Rhodes, San Francisco, and D. C. Collins, Rochester, Minn.—p. 252.
Dissemination of Cancer from *Breast. D. V. Trueblood, Seattle.—p. 258.*

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 827-872 (May 7) 1932

*Surgical Treatment of Intrathoracic New Growths. A. T. Edwards.—p. 827.
Porencephalic Imbecility: Case. R. J. A. Berry and R. M. Bates.—p. 830.
*Spontaneous Hypoglycemia. A. Ramsbottom and C. G. Eastwood.—p. 833.
Compression Fracture with Comminution of Body of Third Lumbar Vertebra and Neural Arch of Fourth Vertebra with Paraplegia. H. D. Isaacs.—p. 835.
Chronic Gastric Ulcer in Boy Aged 13. M. Oldfield.—p. 836.
*Edema in the New-Born. J. Gibbens.—p. 837.
*Local Anesthesia for Tonsillectomy. J. W. Costello.—p. 839.

Intrathoracic Growths.—According to Edwards, modern methods of investigation enable a much earlier and more correct diagnosis of intrathoracic growths to be made and often assist one to determine the exact nature of these tumors. The methods entail: (1) careful roentgen examination of the chest from the anteroposterior, lateral and oblique aspects; (2) further roentgen examination after the induction of artificial pneumothorax, or gas replacement of effusions; (3) the delineation, when indicated, of the bronchial tree by iodized oil; (4) the introduction of the thoracoscope into a pneumothorax cavity, when this is possible, for visual examination of the superficial surface of the lung and pleura, and determination of the superficial characters of the tumor (projection into the pleura), and (5) bronchoscopic examination in which iodized oil gives evidence of bronchial obstruction, or in cases in which hemoptysis is a prominent feature, and in which the sputum is negative for tubercle bacilli after several examinations. In spite of these methods exact diagnosis will be impossible in certain cases, and it is in these that exploratory thoracotomy should be advised with certain precautions. The operation is of no greater severity than exploratory laparotomy, and, in fact, the convalescence is often shorter. By this means, tumors that were apparently malignant have been proved to be benign and have been successfully removed, while others, definitely malignant, have been found operable. The hope of satisfactory treatment of all types of intrathoracic new growths, benign or malignant, depends on early diagnosis.

Spontaneous Hypoglycemia.—Ramsbottom and Eastwood call attention to the fact that cases of hypoglycemia associated with widely different pathologic states are recorded. The majority appear to be connected with progressive lesions of the pancreas. In a case observed by them, however, so far as could be seen from a naked-eye examination of the pancreas, no demonstrable lesion was present. The only pathologic conditions discovered were gallstones and a greatly distended appendix; and the prominent physical signs—Argyll Robertson pupils, extensor plantar response, and irregular pupils—suggested a lesion of the central nervous system. Therefore it occurred to the authors that the dysfunction of the pancreas, leading to hyperinsulinism, may be a reflex phenomenon secondary to an infected gallbladder; and, in view of the fact that temporary insulinism produces absence of reflexes with extensor plantar responses, persistent insulinism may produce this condition permanently (also dysarthria and Argyll Robertson pupils) by acting on the bulb and midbrain.

Edema in the New-Born.—Gibbens states that edema is a symptom of fairly common occurrence in the new-born, especially in premature and debilitated infants; it is often directly due to the effects of cold in the capillaries and to circulatory weakness. If the condition is recognized early and treated promptly, the outlook is quite favorable; while in cases that are febrile it is commonly an early manifestation of sepsis. Nephritis is only rarely a cause of edema in the new-born.

Local Anesthesia for Tonsillectomy.—In the administration of local anesthesia for tonsillectomy, Costello gives preliminary morphine only to an unduly fearful minority; the patients' cooperation is gained by a short explanation of what is to be expected of them. The fauces are liberally sprayed with 10 per cent solution of cocaine, after the patient has been cautioned against swallowing any of it. In five minutes the injection of 0.75 per cent procaine hydrochloride and epinephrine may be commenced. A light syringe and long needle are necessary. Injections are made into the upper and lower poles and just outside the margin of the anterior and posterior pillars, about the center. Enough should be injected to encircle the tonsil with a band of anemic tissue and to saturate its bed, from which it will project rather than usual if not too adherent or fibrosed. The faucial tissues should not be blown into edematous folds with the solution. By the time the second injection is finished, the first tonsil will be ready for dissection. This is done with the finger or dissector and scissors but requires considerably more gentleness than is at times used in the dissection of tonsils under general anesthesia. In most cases the work is done in a field that is nearly dry, and one can proceed deliberately. The smallest adhesions should be snipped instead of torn. It is at this stage that the cooperation of the patient becomes particularly valuable, as by keeping his mouth well open and pharynx relaxed he will give good exposure of the parts with the occasional help of a tongue depressor used only lightly. Any form of gag should be avoided, as being too uncomfortable for the conscious patient. At any stage the partially dissected tonsil may be held with a swab while the patient is allowed to relax his jaw and rest; indeed, these spells may be encouraged if the tonsil is looked on as a piece of raw tissue and an efficient hemostat. After the removal of the second tonsil is completed, swabs held in the tonsillar fossae for a few minutes suffice to reduce the hemorrhage to a point at which the saliva is just colored, and the patient is able to walk to the ward or be driven to his home.

Glasgow Medical Journal

36: 225-280 (May) 1932

Plastic Replacement of Upper Lip in Case of Epitheliomatous Ulcer Resulting from Roentgen-Ray Treatment of Sycosis Barbae. A. J. Hutton.—p. 225.
Disseminated Encephalomyelitis: Preliminary Communication. Elizabeth Milligan Pollock.—p. 231.
Sir Walter Scott and Medicine. A. W. Cassie.—p. 238.

Journal of Hygiene, London

32: 143-300 (April) 1932

Serologic Diagnosis of Typhoid and Paratyphoid Fevers. J. Smith.—p. 143.
*Effects of Excessive Intake of Magnesium by Rat, Especially Concerning Factors Relating to Production of Renal Calculi. Elsie Watchorn.—p. 156.
Spermicidal Powers of Chemical Contraceptives: IV. More Pure Substances. J. R. Baker.—p. 171.
Effect of Parboiling and Milling on Antineuritic Vitamin (B) and Phosphate Content of Rice. W. R. Aykroyd.—p. 184.
*Latent Infection with C. Diphtheriae in Association with Bacterial Experience and Schick Immunity. S. F. Dudley.—p. 193.
*Growth Under Vita Glass. I. N. Sutherland.—p. 211.
Incidence of Encephalitis Lethargica and Acute Anterior Poliomyelitis in Lancashire and Elsewhere. P. Stocks.—p. 219.
Study of Bacillus Mucosus-Capsulatus Group. Hilda R. Hay.—p. 240.
Prophylactic Vaccination in Epidemic Meningococcal Meningitis. D. Riding and N. L. Corkill.—p. 258.
Conditions of Temperature and Humidity of Air Between Skin and Shirt of Man. K. Mellanby.—p. 268.
Streptococcus Mucosus Lyticus. L. S. Dudgeon and D. C. L. Derry.—p. 275.
Pleomorphism of Proteus Vulgaris Determined by Sodium Chloride Content of Culture Medium and Simulating Stages in Life Cycle. E. M. Dunlop and H. E. Maitland.—p. 283.
Rôle of Tobacco-Smoking in Production of Cancer. E. A. Cooper, H. G. Bott, R. S. Tipson, F. W. M. Lamb and E. Sanders.—p. 293.

Magnesium and Renal Calculi in Rats.—Watchorn describes experiments in which she noted that rats taken from mixed stock diet and fed synthetic diet containing an excess of magnesium carbonate developed urinary calculi in a large number of cases. The incidence of calculi was much higher in the females. Addition of excess of calcium carbonate to the diet prevented the formation of calculi. Rats previously fed for a short time on the synthetic diet and normal salt mixture did not develop calculi but suffered from severe catharsis. Rats on mixed stock diet had a more acid cecum and colon than those on synthetic diet. No significant alterations were found in the calcium, magnesium or inorganic phosphorus of the blood on any of the diets. Extra magnesium or calcium or sodium carbonate lowered the urinary phosphate excretion. Extra magnesium or calcium had little effect on the urinary excretion of the other but tended in each case to lower the output.

Diphtheria in Association with Bacterial Experience and Schick Immunity.—Dudley reports that in a semiclosed institution, Greenwich Hospital School, there was no constant relation between the prevalence of cases and carriers of virulent, or avirulent, diphtheria bacilli. Carrier rates showed a *seasonal periodicity with a maximum in the autumn and a* minimum in the winter school term. High rates for carriers of virulent bacilli were found in the absence of clinical diphtheria and presence of numerous Schick susceptibles. As much as 40 per cent of a randon sample of healthy boys, none of whom contracted diphtheria, were discovered to harbor diphtheria bacilli within one year, during which the average carrier rate in the sample was 6.8 per cent. The carrier rate for avirulent diphtheria bacilli, among boys recently infected with virulent bacilli, was three times the expected rate. The carrier rate for virulent diphtheria bacilli, among boys recently infected with avirulent bacilli, was no higher than the expected rate. The frequency of avirulent diphtheria bacilli infections was twice as great among Schick susceptibles as among Schick immunes. Carriers of virulent bacilli (with five exceptions) were always found to have Schick-negative reactions, in spite of their being more frequent among the junior members of the institution. Carriers of avirulent diphtheria bacilli were as common among the senior as among the junior Schick-immune members of the school. Carriers of avirulent bacilli were less frequently found in those Schick-susceptible members of the community who were most quickly immunized by artificial diphtheria antigens. The hypothesis that, when a Schick susceptible is infected with virulent diphtheria bacilli, the latter often acquire avirulence, could satisfactorily explain many anomalies in the distribution of latent infection with diphtheria bacilli and Schick immunity.

Growth Under Ultraviolet Transmitting Glass.—According to Sutherland, white rats reared from the age of 30 to 275 days under ultraviolet transmitting glass, and properly fed, do not grow at a different rate from those reared under ordinary glass. The offspring of these rats, kept in the same environment, grow at the normal rate when compared with controls born and reared under ordinary window glass.

Journal of Tropical Medicine and Hygiene, London

35: 113-128 (April 15) 1932

Leprosy in Children: Study of One Hundred Cases in Central Leper Hospital, Makogai, Fiji. C. J. Austin.—p. 113.

Effect of Ameba (Hartmannella) Castellanii on Bacterial Cultures. C. E. van Rooyen.—p. 118.

Susceptibility of Some Birds and Wild Animals to Infection with Trypanosoma Rhodesiense. J. F. Corson.—p. 123.

Lancet, London

1: 971-1026 (May 7) 1932

*Sterility. V. Bonney.—p. 971.

*Stones in Common Bile Duct. R. P. Rowlands.—p. 975.

*Increased Carbohydrate in Treatment of Diabetes Mellitus. S. C. Dyke.—p. 978.

*Tubercle Bacilli in Blood Stream in Human and Animal Tuberculosis. C. Weatherall.—p. 980.

*Cultivation of Tubercle Bacillus and Occurrence of Tuberculous Bacillemia. J. N. Cumings.—p. 983.

Sterility.—Bonney states that in all cases of sterility with no obvious cause apparent the husband should be examined as regards both his physical condition and the state of his semen. The only reliable way to examine the semen is to do it microscopically in his own house almost immediately after it has been passed. A strictly scientific investigator would then proceed to mix the semen with some of the upper vaginal discharge collected in a pipet and watch the behavior of the sperm under these conditions. This, however, is not usually done. The woman must be investigated like any other gynecologic case by question and physical examination and, this completed, the tubal insufflation test should be carried out. This should always be performed under an anesthetic, and the question therefore arises whether or not the surgeon should advise his patient to let him proceed at once to abdominal section in the event of the test indicating that both tubes are closed. It is important in this connection to bear in mind that failure to get air to pass along the tubes, though usually due to fixed conditions, may be dependent on temporary causes, such as thickening of the cornual endometrium, or even, it is said, muscular spasm at the tubo-uterine junction. If either of the two latter conditions obtains, it will be found on opening the abdomen that air can be forced down the tube though it cannot be forced upward. Blockage of this character is not common, but nevertheless in a case in which tubal insufflation indicates that both tubes are blocked it is often advisable to repeat the test in a month and to proceed to open the abdomen only if, at the second time of trying, air still will not pass. Many women, though they are anxious to have a child, do not desire it sufficiently to make them willing to undergo an abdominal operation for the sake of the possibility of having one. On the other hand, there are cases in which the presence of marked retroflexion, or uterine fibroids, or a thickening in the region of the tubes, or a past history strongly pointing to salpingitis makes it practically certain that the failure of air to pass is due to a fixed condition, and in such cases repetition of the test is unnecessary before opening the abdomen.

Stones in Common Bile Duct.—Rowlands believes that, when the symptoms and signs point strongly to the presence of calculous obstruction of the common bile duct, an operation is indicated whenever the condition of the patient allows it, for there is little hope of cure by medical treatment or by waiting, although the stone sometimes at last ulcerates through and is discharged into the duodenum. But it is usually wise to defer operation until the quiet period; i. e., until jaundice and especially fever have abated. Operations on the common duct are much safer when undertaken in the quiet period, but when colic and jaundice continue indefinitely without remission it is necessary to operate without waiting too long for a quiet period, before the patient has wasted unduly and has become unusually liable to bleed or to become comatose after operation. Occasionally a stone firmly impacted in the common bile duct causes sloughing and perforation of the duct with local or even diffuse peritonitis. When the cause of chronic jaundice is uncertain it is generally wise to explore, and the author has often been rewarded in such cases by finding one or more stones in the common bile duct. Moreover, if not stone, but some irremovable cause of obstruction is found, a cholecystogastrostomy can be made to overcome the jaundice and the intolerable itching and anorexia which make the patient so unhappy and always shorten his life. It is rarely wise to allow many repetitions of biliary colic with jaundice, although it may be reasonable not to operate after the first attack in the hope that the only stone has passed and that no more may develop. After every fresh attack spontaneous cure becomes more and more improbable, because common duct stones inevitably and often rapidly increase in size and become naturally more difficult to pass through the duodenal orifice of the duct, which is only one-twelfth inch (0.21 cm.) in diameter. Moreover, more or less septic infection of the ducts and liver frequently follows and leads to serious loss of liver function, with marked increase of the mortality after delayed operation.

Increased Carbohydrate in Diabetes Mellitus.—According to Dyke, the higher carbohydrate diet in diabetes mellitus possesses many advantages. It is more palatable and cheaper than the old high fat diet and approaches more closely to the diet in general use in England. It is a comparatively simple matter to arrange for the diabetic subject a diet requiring no special cooking in the home and which he can select from any ordinary meal table when away. The use of special diabetic foods is not only unnecessary but actually objectionable. Apart from consideration of cost, palatability and convenience, the higher carbohydrate diet is further advantageous from the standpoint of the general health. The older type of diabetic diet largely depended for its caloric value on the high fat content; a high fat intake in the diet tends to produce ketosis and also actually has some antagonistic effect on insulin. Further, a high fat intake tends to raise the level of the cholesterol in the blood, and there is ample though possibly not conclusive evidence that a high blood cholesterol is one at any rate of the determining factors in bringing about atheromatous changes in the blood vessels. Arteriosclerosis is almost invariable among diabetic patients of any standing, even those successfully treated on the older high fat diets, and the complications of arteriosclerosis are among the commonest of the causes of death and disablement of diabetic subjects, treated and untreated alike. Evidence is already collecting that increase of the carbohydrate content of the diet is effective in clearing up the arteriosclerosis and reducing the blood pressure.

Tubercle Bacilli in Blood Stream.—On the principle of Löwenstein's technic, Weatherall made cultures from the heart blood of forty tuberculous guinea-pigs. Acid-fast bacilli failed to grow. From thirty sanatorium cases of pulmonary tuberculosis, blood clot was digested with pepsin by the method of Jousset; after sterilization with acid, cultures of the residue on egg medium failed to grow tubercle bacilli. From small quantities (0.5 cc.) of heart blood of sixty-three tuberculous guinea-pigs cultured in veal broth by the method of Dreyer and Vollum, one primary positive culture was obtained, and in two cases subcultures on egg medium were successful. Blood from fifteen tuberculous patients was injected into guinea-pigs. One animal, inoculated from a case of advanced pulmonary tuberculosis, developed lymph node and generalized tuberculosis. The other fourteen proved negative.

Cultivation of Tubercle Bacillus.—Cumings describes attempts to cultivate the tubercle bacillus from pathologic materials on Corper's potato medium and Hohn's egg medium. The egg medium yielded more than twice as many positive cultures as the potato medium, and a positive culture was obtained in only about 50 per cent of the cases in which the tubercle bacillus was demonstrated by direct examination or guinea-pig inoculation. Blood culture was performed in cases of tuberculosis, multiple sclerosis and lymphadenoma, and in no case was a positive result obtained.

Medical Journal of Australia, Sydney

1: 521-564 (April 16) 1932

Hodgkin's Disease: A Treatise. L. Utz and Leila Keatinge.—p. 521.

Gastro-Enteritis or Epidemic Diarrhea: Review of an Epidemic. Margaret Harper.—p. 538.

Account of a Medical Survey of Norfolk Island, Directed Primarily to the Question of Hookworm Disease, but Also Including Series of Pirquet Tests. A. H. Baldwin.—p. 543.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

48: 575-620 (May 9) 1932

Origin of Hematemeses. René-A. Gutmann and M.-J. Demole.—p. 576.

Gastric Intolerance of Hemorrhagic Form: So-Called Essential Hemorrhages. M. A. Tzanck.—p. 585.

*Sclerosis of Varices and Hemorrhoids by Glycerin with Addition of Chrome Alum. H. Jausion, G. Medioni, A. Pecker and W. Gozlan.—p. 587.

Evolution of Syndrome of Exophthalmic Goiter Toward Myxedema Following Treatment by Diiodotyrosine. C. I. Parhon and L. Ballif.—p. 601.

Rechloruration in Course of Certain Digestive Disturbances. L. Binet and C. Zamfir.—p. 605.

*Craniohypophyseal Xanthomatosis (Schüller-Christian's Disease). E. Lesné, J.-A. Lièvre and Y. Boquien.—p. 610.

Therapeutic Gangrene of Cancer of Breast. M. Renaud.—p. 616.

Peripheral Venous Pressure. M. Villaret.—p. 617.

Etiology and Therapy of Enuresis. J. Paraf.—p. 619.

Sclerosis of Varices and Hemorrhoids by Glycerin and Chrome Alum.—In the opinion of Jausion and his associates, glycerin with chrome alum added to it deserves a leading place among sclerogenous agents. They find that it has the undeniable advantages over many other products of (1) rapidity of action, (2) lack of causticity and (3) innocuity. The technic of its therapeutic use is simple. The formula for the solution used by the authors is 126 Gm. of glycerin, 1.5 Gm. of chrome alum and 200 Gm. of distilled water. The chrome alum prevents possible slight hematurias due to the glycerin and at the same time augments the sclerosing power of the glycerin. In varicose vein therapy from 5 to 10 cc. (rarely 15 or 20) is injected in a single dose at a single site. The injection is made into the highest of the varicose dilatations after application of a tourniquet as near as possible to the base of the limb. The tourniquet, applied while the patient is standing, prevents sclerosis at distant points in the circulation. Injections are made at weekly intervals. Total obliteration is imperative. This is usually attained by the glycerin and chrome alum mixture in from two to four injections, rarely more. Of sixty-five patients treated with this mixture, only two had to be reinjected a single time because of imperfect obliteration. Several cases are reported. For the treatment of hemorrhoids the same formula is used and the same amount is injected in one dose. Only external hemorrhoids were treated by the authors. The technic is described. One injection usually results in cure. If a second injection is necessary, an interval of one month is advised. Proctoscopy practiced before and after treatment in some of the cases indicates that cure of the external hemorrhoids suffices to regulate the venous circulation of the anal canal; the endovascular and perivascular sclerosis gradually reaches the higher ectasias. Of thirty-four patients in whom hemorrhoids were sclerosed by glycerin mixed with chrome alum, only one required a reinjection. No grave complications, such as gangrene of a large strangulated hemorrhoid, were encountered, and pylephlebitis, the authors think, is less to be feared than embolism in the treatment of ulcerated varices.

Craniohypophyseal Xanthomatosis (Schüller-Christian's Disease).—Lesné and his associates report and discuss a case of craniohypophyseal xanthomatosis, or Schüller-Christian's disease. A girl of 3 presented the tetrad of symptoms characterizing the disease: diabetes insipidus, cranial lacunae and lesions, exophthalmia and disturbance in development. The cranial lacunae, at least three in number, were revealed by roentgenograms; the largest one in the left occipital region could be felt on palpation. The authors say that virtually all histologic study has shown that, in these lesions, osseous tissue is replaced by xanthomatous cells; sometimes fibrosis is seen, seeming to replace the xanthomatous cells. Xanthomatous cells are large uninucleated or multinucleated cells with small peripheral nuclei, often pyknotic. The overabundant cytoplasm presents a vacuolar, foamy appearance, due to inclusion of cholesterol esters and giving double refraction with Nicol prisms; neutral fats also are present but it is the lipoid inclusion that is characteristic of xanthomatosis. The principal therapeutic measures are listed by the author thus: posterior hypophyseal opotherapy, roentgen therapy of the cranial lacunae and the infundibulo-tuberian region, insulin therapy and thyroid opotherapy.

Presse Médicale, Paris

40: 813-828 (May 21) 1932

*Sign of Plantar Pain Anterior to Heel for Early Diagnosis of Postoperative Phlebitis. Ducuing.—p. 813.

Use of Methylated Antigen in Dispensary Practice. L. Sayé and T. Seix.—p. 814.

Thermic Elevation Provoked by Diathermy in Treatment of Acute Asthma. S. M. Feinberg and S. L. Osborne.—p. 816.

Cholecystography and Contractions of Gallbladder. H. Godard and A. Koliopoulos.—p. 818.

Plantar Pain Anterior to Heel as Early Diagnostic Sign of Phlebitis.—Plantar pain as an early symptom of postoperative phlebitis was first described by Denecke in 1928. Ducuing discusses this sign, calling it plantar pain anterior to the heel in order to designate more exactly the location of the pain. The sign consists in the manifestation of pain in the posterior part of the plantar arch, close to the heel and on the median line, a few days after operation or sometimes when the patient arises for the first time. The pain can be provoked by the surgeon and is sometimes so acute that patients present a veritable hyperesthesia of the skin in the region indicated. In certain cases the spontaneous pain follows the interior of the foot in front of the calcaneum under the medial malleolus and in the anterior malleolar groove. It may be accompanied by a pain provoked in the calf by dorsal flexion of the foot which compresses the posterior tibial veins. This pain, according to Denecke, is due to the pressure which the thrombosed veins exert on the nerve branches that are in close contact with them. These veins are all the more compressed because the spaces in which they are contained are not extendable and cellular tissue, which might reduce the pressure, is normally absent. Necropsies done by Payr show the frequency of phlebitis of the superficial and deep plantar veins in all persons operated on and the constancy of these lesions in individuals with phlebitis of the extremities. The authors thinks that venous spasms also play an important part in all phlebitic pains, especially in precocious ones. In discussing the diagnostic value of this sign, he says that it is indisputable when it exists, but he considers it inconstant and not always very precocious. In his opinion, lesions of the pelvic veins play a more important part in determination of phlebitis of the lower extremities than lesions of the plantar veins. In cases in which phlebitis first attacks the leg or the plantar veins, the plantar pain may manifest itself as an early sign of postoperative phlebitis, but more frequently the early signs of this complication are found in the pelvis. Despite these criticisms the author thinks that this sign should be known and its value not neglected, especially in view of the difficulty of foreseeing a postoperative phlebitis and the importance of early immobilization in preventing aggravation of a phlebitis or appearance of an embolism.

Giornale di Batteriologia e Immunologia, Turin

8: 225-336 (March) 1932

Gastroduodenal Ulcer Due to Insufficient Alimentation. V. Gronchi.—p. 225.
Methods of Differentiation in Bacteria of the Brucella Group. E. Pugnani—p. 231.
*New Method of Rapid Staining of Tubercle Bacilli in Sputum. P. Doglio.—p. 243.
Bacteremia in Diphtheria. P. Roberto.—p. 247.
Mechanism of Habituation of Bacteria to Toxins. D. Grandi.—p. 254.
Bacteriologic Research in Measles. Maria Teresa Casassa.—p. 274.
Behavior of Phagocytes in Experimental Acidosis. L. La Grutta.—p. 295.
Microbic Dissociations. A. Azzi.—p. 303.

Rapid Staining of Tubercle Bacilli in Sputum.—Doglio spreads the material on a slide and applies Ziehl's carbolfuchsin to it, heats the slide until it steams, and afterward washes it thoroughly in running water. Then he places it for from forty to fifty seconds in a solution of his own: brilliant yellow 0.15 Gm., concentrated sulphuric acid 10 cc., alcohol 20 cc., and distilled water 85 cc. It is again thoroughly washed and dried with blotting paper. The bacilli are colored red on a lemon yellow background. Three hundred tests revealed that: 1. The method is more rapid than that of Ziehl, taking exactly half the time. 2. The tubercle bacilli are shown clearer and more numerous, thereby facilitating research. 3. The method is just as reliable as the Ziehl-Neelsen test; there were no negative results when the Ziehl-Neelsen test was positive.

Policlinico, Rome

39: 285-356 (May 15) 1932. Surgical Section

*Clinical and Roentgenologic Considerations of Function of Oddi's Sphincter and Cholecystographic Methods of Graham and Antonucci in Patient with Biliary Fistula. G. Barbéra and A. Capua.—p. 285.
Clinical Value of Morphologic and Numerical Variations of Leukocytes in Surgical Diseases. S. Boamcardı.—p. 297.
Pathogenesis of Vesico-Ureteral Reflux. S. Scandurra —p. 313.
Perforated Gastroduodenal *Ulcers* and *Their Treatment.* G. Scollo.—p. 346.

Function of Oddi's Sphincter.—Barbéra and Capua injected an opaque substance into the intrahepatic and extrahepatic biliary tract of a patient through an hepatic fistula due to suppurating echinococcal cyst of the liver. The substance was thought to be in the gallbladder after an hour because of its disappearance from the biliary tract, the enlargement of the cholecystic shadow and the absence of opaque substance in the digestive tract. Roentgen examination revealed the perfect tonicity of Oddi's sphincter, which, having let pass a small amount of opaque substance, contracted and held the rest of the injection for at least two hours more. The changes in the duodenal tonus due to peristalsis had no influence on the liquid collected in the gallbladder. The successive accumulation of the opaque substance in the cyst, the intrahepatic bile ducts, the hepatic and cystic ducts and the gallbladder was easily explained because it was the way physiologically followed by the bile in order to come to the cholecystic reservoir. The reflux of the substance from the choledochus to the gallbladder was explained either by such action of the gallbladder through hydrodynamic causes or by antiperistaltic movements of the wall of the choledochus. The gallbladder was credited with great power of adaptability to large quantities of liquids arriving there abruptly. The authors applied the tests of Graham and Antonucci to the same individual. They compared the behavior of the bile eliminated in the two tests and found that while in the test of Graham the bile gradually carries the iodine to the gallbladder, which concentrates it, in the test of Antonucci there is a rapid arrival of much bile rich in iodine and the concentration *on* the part of the gallbladder is less important.

39: 797-836 (May 23) 1932. Practical Section

Orthostatic Arterial Hypotension. M. Tripodi.—p. 797.
Pathogenesis and Treatment of Esophageal Diverticulitis. M. Margottini.—p. 801.
*Case of Acute Erythremic Myelosis. A. Brugi.—p. 807.

Case of Acute Erythremic Myelosis.—Brugi reviews the literature of myelosis and then distinguishes between three types of partial hyperplastic myelosis: 1. Acute erythremic myelosis, characterized either by basophilic orthochromatic and polychromatophilic erythroblasts or the same types of megaloblasts. 2. Acute leukemic myelosis, which after a brief aleukemic period is characterized by a notable increase of the leukocytes of the granulocytic immature type, and by an almost normal or greatly decreased number of red cells. From the histologic point of view there is hyperplasia of the leukoblastic medullary tissue and the myeloid infiltrations are characterized by the presence of immature cells in the spleen, liver and lymph nodes. 3. Acute aleukemic myelosis, similar to the leukemic form except for the aleukemic hematology. The chronic form is characterized by a lesion of the leukoblastic myeloid tissue. The author describes the symptomatology of acute megaloblastic and pernicious erythremic myelosis as: (*a*) acute beginning and course of the disease, (*b*) severe anemia, (*c*) general malaise, (*d*) hemorrhages of the skin, mucous membrane and internal organs, (*e*) pseudoscorbutic lesions of the gums and palate, (*f*) necrotic angina, (*g*) remittent fever and (*h*) moderate splenomegaly and hepatomegaly. The hematologic characteristics were promegaloblasts, basophilic, polychromatic and orthochromatic megaloblasts, and erythroblasts.

Prensa Médica Argentina, Buenos Aires

18: 1575-1622 (April 30) 1932

**Occlusion of Appendix.* J. Llambias and T. Malamud.—p. 1575.*
Delmas Method in Labor. J. C. Lascano.—p. 1586.
*Mammary Vicarious Menstruation. E. B. Ries.—p. 1602.
Postoperative Treatment in Meniscectomy for Restoration of Function of Knee Joint. J. L. Giovannini Cattáneo.—p. 1607.
Relation of Cardiovascular System to Endocrinology. P. M. Barlaro.—p. 1611.

Occlusion of Appendix.—Llambías and Malamud *made* a study of ninety-five appendixes (forty-five removed at operation and fifty removed at necropsy). Partial or complete occlusion was found in five appendixes (11 per cent) of the first series and in twelve appendixes (24 per cent) of the second series. In both series the predominant neoformation was a fibroneuroma. The persons from whose cadavers the appendixes were removed (with the exception of only one case) did not present at any time clinical symptoms which might have indicated, in some form, any pathologic condition of the organ. Occlusion of the appendix in those cases had not been suspected during the patient's life and it was an unexpected observation at necropsy. Occlusion of the appendix has no protopathic value in the determination of the so-called chronic appendicitis. The routine anatomicoclinical studies of parallel series of appendixes removed at operation and at necropsy are important to make an estimation of the clinical value of occlusion of the appendix, by means of which a better understanding of some anatomicoclinical pictures observed in the pathologic conditions of the appendix may be obtained.

Mammary Vicarious Menstruation.—Ries reports a case of vicarious menstruation from the breast in a virgin, aged 32, who up to the appearance of the mammary hemorrhages had not had symptoms indicating genital disturbances. While the patient was in apparently normal condition, menstruation disappeared and monthly hemorrhages from the breast followed. Hemorrhages from the breast may be observed in hysterical women, in women with a predisposition to hemophilia, during the course of hemorrhagic purpura, during lactation, as supplemental menstruation (cases showing a diminished menstruation), as vicarious menstruation (suppression of menstruation, as the author's case), or they may be caused by trauma of the breast or by fissures or sores of the nipples. After all the conditions mentioned (especially trauma) have been ruled out, hemorrhage from the breast may have a diagnostic value in pointing out the presence of epithelioma of the breast in an early stage of development. The patient should be watched carefully for a possible future development of the tumor, even if during examination no tumor was detected on palpation. After all the conditions mentioned (hysteria, hemophilia, hemorrhagic purpura, lactation, trauma, fissures or sores of the breast) have been ruled out, but provided the patient has a diminished or suppressed menstruation, the presence of either supplemental or vicarious menstruation is obvious. The prognosis for the patients with vicarious menstruation is favorable. Spontaneous recovery takes place if the patient is given the proper treatment, which aims to restore the genital activity and normal menstruation. If the patient is at the menopausal age, recovery will take place as soon as the symptomatic hypertension is controlled. Opotherapy and sportive exercises give satisfactory results. In cases in which opotherapy does not give satisfactory results it may be associated with the administration of thermal or electrical therapy (hot vaginal douches or intra-uterine electrical applications) which aim to regulate the hyperemia of the uterus. In grave cases of vicarious hemorrhages, scarification of the cervix and the administration of strong saline cathartics are advisable. This treatment aims to produce a derivation of the blood toward the genital organs. Gynecologic operations are indicated when the disturbances of menstruation are associated with malformations of the vagina or of the uterus. Surgical dilation of the cervix, either with or without intubation (whichever is necessary) is indicated in cases in which the menstrual disturbances are associated with cervical stenosis. As the last resource in cases of either cervical stenosis or genital malformations, castration is indicated. The author's patient received a combined treatment of ovarian hormone and aloe preparations and also a preparation of the anterior lobe of the hypophysis, and she was instructed to perform sportive exercises. Menstruation in this case returned to normality and the hemorrhage from the breast disappeared.

Semana Médica, Buenos Aires

39: 1281-1360 (April 28) 1932. Partial Index

Ocular Symptoms in Diagnosis of Intracranial Tumors. R. Argañaraz.—p. 1281.
Toxemia in Pregnancy: Evacuation of Uterus. T. A. Chamorro.—p. 1288.
Diffuse Epithelioma of Cranial Vault: Case. G. Zorraquin.—p. 1293.
Tumors of Orbit: Clinical and Anatomic Study. M. Balado and M. Ibáñez Puiggari.—p. 1302.
Undulant Fever in Buenos Aires. A. A. Carabelli, J. Tenconi and R. Palazzo.—p. 1307.
Comparative Value of Classic Cesarean Section and Lower Uterine Segment Cesarean Section in Placenta Praevia. R. Echevarria.—p. 1313.
*Pneumococcic Peritonitis in Childhood. B. Paz and I. Diaz Bobillo.—p. 1316.
The So-Called Rare Treatment in Osteo-Articular Purulent Infections. T. Zwanck.—p. 1325.

Pneumococcic Peritonitis in Childhood.—Paz and Díaz Bobillo describe their experience with forty-five cases of pneumococcic peritonitis. They conclude that pneumococcic peritonitis is a disease which usually affects children between 2 and 10 years of age, being more frequent in girls than in boys. The pathogenic agent is Fränkel's pneumococcus. The routes of spread of the infection are, probably, the blood and the genital tract. Contrary to the current conception, diarrhea is not a constant symptom; constipation is also frequently observed. The patient with pneumococcic peritonitis presents a grave condition of infection, which is not in relation to the local picture. Early diagnosis is of great importance. Frequently the disease is erroneously diagnosed as peritonitis of an appendicular origin. Pneumococcic peritonitis at the onset of the disease is a generalized peritonitis. At a further stage it is localized, while the contrary is true of peritonitis of an appendicular origin. The prognosis depends on the opportuneness with which the operation is performed. The disease follows a more benign course if the operation is performed when the peritoneal exudates and fluids have already formed a collection; that is, between twenty and twenty-five days (and only in exceptional cases between twenty and forty-five days) after the onset of the disease. As a rule, both infectious and general symptoms have improved after that period, under the effect of the medical treatment. Pneumococcic peritonitis follows a grave evolution when the patients are operated on early during the disease. However, when the operation is deferred too long there is a danger of reaggravation of the symptoms of infection and of a possible rupture of the peritoneal collection. When a girl between 2 and 10 years of age presents an acute peritoneal condition associated with a grave infection, one should give great consideration in the diagnosis to the possible presence of a pneumococcic peritonitis.

Archiv für Verdauungs-Krankheiten, Berlin

51: 281-418 (May) 1932

*Problems in Scurvy. H. Öhnell.—p. 281.
Conservative Treatment of Acute Necrosis of Pancreas. L. Strauss.—p. 321.
*Rational Method and Dosage in Galvanization of Stomach. A. Kirstner.—p. 327.
Raw Diet. O. Thill.—p. 334.
Allergic Manifestations in Disorders of Biliary Tract. E. Fodor and S. Kúnos.—p. 347.
Gastritis Problem in Light of Modern Functional Tests of Stomach. W. Schemensky and J. Geling.—p. 373.
Diathermy. Treatment of Habitual Constipation. H. S. Lurje.—p. 377.
Diet in Prolonged Dyspnea. G. Mészáros.—p. 380.

Problems in Scurvy.—Öhnell shows that the development of scurvy during special diets that are instituted on account of disorders of the digestive organs is not at all a rarity. His material includes sixty-two cases in which scurvy was manifest, twenty-six in which it was latent, and forty-nine questionable cases. In a large number of cases, the development of scurvy could be traced to a strongly scurvygenic diet. In other instances this was less evident. The author thinks that in some cases there may exist a greater predisposition for scurvy, which may be due to the intestinal disease and perhaps also to deficient acid formation in the stomach; however, he does not consider this assumption definitely proved. As methods to detect latent scurvy, he mentions examinations of the teeth and tests of the capillary resistance. Based on a material of thirteen cases, he cites factors in support of his assumption that scurvy may cause Ménière's disease, and he also considers it possible that some cases of otosclerosis are of this origin. Further, he points out that scurvy may eventually be the cause of certain gynecologic disorders, such as amenorrhea and sterility. Quite frequently scurvy is accompanied by symptoms of neurosis and in some instances depressive psychoses exist. For the treatment and prophylaxis of scurvy, the significance of a sufficient supply of vitamin C is emphasized.

Galvanization of Stomach.—Kirstner stresses that galvanization of the stomach, in order to be helpful, requires careful dosage and a suitable method, for incorrect application defeats its efficacy. The current strength should not be less than 50 milliamperes, and after several treatments it may be increased to 100 milliamperes. Each treatment should last about thirty minutes. The electrode that is applied to the region of the stomach should be 200 square centimeters in size. In cases of deficient and normal secretion, galvanization of the stomach produces an increase; in cases with increased secretion, galvanization produces fluctuations to both sides. The evacuation of the stomach is accelerated by galvanization, and spastic conditions of the pylorus are counteracted.

Deutsche medizinische Wochenschrift, Leipzig

58: 763-802 (May 13) 1932

Therapy of Pulmonary Tuberculosis in Last Fifty Years. R. Staehelin.—p. 763.
*Modification of Tuberculosis by Other Diseases. A. Bacmeister.—p. 766.
Roentgen Examinations to Detect Tuberculosis in German Army. Franz and Müller.—p. 769.
*So-Called Old Age Lung. F. Leeser.—p. 771.
Statistics on Surgical Treatment of Pulmonary Tuberculosis. H. Schulte-Tigges.—p. 772.
Significance of Bacteriologic Investigation for Development of Dermatology. W. Scholtz.—p. 774.
Significance of Constitutional Diagnosis and Constitutional Therapy in Children's Sanatorium. K. Klare.—p. 776.
Bilateral Artificial Pneumothorax. H. Dorendorf.—p. 777.
Circulatory Disturbances in Pulmonary Tuberculosis. R. Cobet.—p. 777.

Modification of Tuberculosis by Other Diseases.—As conditions that create a predisposition for tuberculosis by reducing the resistance of the organism, Bacmeister mentions undernourishment and psychic influences, particularly worries. However, diseases such as pernicious anemia and cancer, which likewise weaken the organism, do not favor the development of tuberculosis. Of the circulatory disorders, those that produce a stasis in the pulmonary circulation, such as mitral defects, protect against tuberculosis, whereas deficient perfusion with blood predisposes to tuberculosis. In regard to mixed infections, the author states that they may cause acute exacerbations of the tuberculosis, but he thinks that this factor was formerly given undue prominence. Bronchitis as well as influenza predisposes to tuberculosis and also exacerbates an existing tuberculosis. However, the former assumption that measles and whooping cough were particularly dangerous for an activation of tuberculosis is, in view of recent observation, no longer justified. In regard to the relationship between syphilis and tuberculosis it is stated that it cannot be demonstrated that syphilitic patients are more predisposed to tuberculosis than other persons; but if a new syphilic infection is acquired in the course of an active tuberculosis, the prognosis of the latter becomes more unfavorable. Of the metabolic disorders, diabetes mellitus is the most frequent complication of tuberculosis. The diabetes is generally the primary and tuberculosis the secondary disease. The combination of gout and tuberculosis is extraordinarily rare, so that formerly an antagonism was assumed between these two conditions. The concurrence of obesity and tuberculosis is likewise comparatively rare, but in constitutional obesity it seems to be somewhat more frequent than in acquired obesity. In connection with obesity, it is mentioned that reducing diets and also the use of hormone preparations for reducing may activate tuberculous foci. The frequent concurrence of pneumonoconiosis and of pulmonary tuberculosis is known, but recent observations indicate that the chemical character of the dust, especially the content in silicic acid, is more important than the size and form of the dust particles.

So-Called Old Age Lung.—According to Leeser, the changes that develop in the lungs of old people are often mistaken for tuberculosis. In describing the pathologic-anatomic as well as the roentgenologic changes in the lungs of the aged he mentions the more distinct outline of the lung, which he ascribes to stasis. Owing to increased pressure, as for instance in emphysema, and to senile degeneration of the vessels and to senile changes in the heart, the hilus appears wider. The senile changes in the vessels make them appear wider and as deeper shadows. There are also changes in the stroma; namely, formation of connective tissue, inflammation and hyaline degeneration. The author further shows how the roentgen picture of the so-called old age lung can be differentiated from the similar roentgenogram of pulmonary tuberculosis.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

125: 117-210 (May 1) 1932

Hematoma of Dura Mater or Hemorrhagic Internal Pachymeningitis. L. van der Horst.—p. 117.
*Ascending Paralysis and Korsakoff's Psychosis in Lymphogranulomatosis. St. Környey.—p. 129.
*Compression of Spinal Cord Produced by Lymphogranulomatosis. L. Delius.—p. 142.
Histopathology of Disseminated Encephalomyelitis. A. Bannwarth.—p. 148.
Normal Muscular Chronaxia in Human Beings. K. M. Walthard and P. Jecklin.—p. 166.
Motor Chronaxia and Sympathetic Neuroses and Exophthalmic Goiter. W. Gros.—p. 192.
Friedreich's Ataxia and Diabetes Mellitus. J. Schloss.—p. 201.

Ascending Paralysis and Korsakoff's Psychosis in Lymphogranulomatosis.—In a woman, aged 48, with lymphogranulomatosis, Környey observed the development of psychotic manifestations that were the beginning symptoms of Korsakoff's psychosis and of an ascending paralysis with extensive sensibility disturbances. The Korsakoff psychosis gradually disappeared but the neurologic symptoms remained. Death followed about three months after development of the neurologic symptoms. Histologic examination revealed a purely degenerative process in the peripheral nervous system and also changes in the corpus mammillare. An acetonuria that had existed for weeks before the development of the neurologic symptoms and a passing hematoporphyrinuria make it appear probable that the pathogenic connection between the lymphogranulomatosis and the neural complication was a disturbance in the metabolism. In the same direction points the identity of the histologic aspects with those processes that are found in Korsakoff's psychosis produced by alcoholism, also the fact that in numerous cases of ascending paralysis a hematoporphyrinuria is demonstrable. These factors make it probable that the different injurious influences, by producing the same pathologic metabolic products, lead to Korsakoff's psychosis, which clinically as well as anatomically is characterized by the same aspects. That in the reported case even following the disappearance of Korsakoff's psychosis the same changes were found in the corpus mammillare as are found in existing, fully developed psychoses, confirms the opinion that the injury of this organ is not the anatomic cause of Korsakoff's psychosis. The combination of an acute ascending paralysis with Korsakoff's psychosis indicates a toxic origin and excludes the existence of acute anterior poliomyelitis or of ascending paralysis of an acute inflammatory genesis. In the toxic form of ascending paralysis the cerebrospinal fluid contains neither globulin nor cells, in contradistinction to the two other diseases mentioned. The ascending paralysis of toxic origin differs from the acute inflammatory form not only in regard to localization but also histologically.

Compression of Spinal Cord Produced by Lymphogranulomatosis.—A case in which compression of the spinal cord was produced by lymphogranulomatosis induced Delius to study the etiology of this compression syndrome. A review of the cases that have been subjected to a pathologico-anatomic examination reveals that there are various forms of this syndrome. He mentions (1) primary meningeal lymphogranulomatous metastases of the dura mater; (2) infiltration of the bone with proliferations of lymphogranulomatous tissues with forward pressing of the dura mater and the compression of the spinal cord produced by this; and (3) lymphogranulomatous proliferations of the lymph nodes, which, outgoing from diseased retroperitoneal or retropleural lymph nodes, grow through the intervertebral foramina into the spinal canal and here may eventually fuse and lead to manifestations of compression.

Medizinische Klinik, Berlin

28: 639-672 (May 6) 1932

*Pseudo-Appendicitis and Concomitant Appendicitis During Childhood. H. Aron.—p. 639.
Tonic Vascular Centers and Their Reflex Relations. J. Pal.—p. 643.
Complications Following Administration of Living Gonococcal Vaccines: Epidemiology of Gonorrhea. H. Felke.—p. 644.
Malignant Sacrococcygeal Chordoma. F. Wahlig.—p. 645.
Acute Quinine Poisoning. G. Wilm.—p. 646.
Present Status of Treatment of Bone Fractures by Wire Traction. W. Block.—p. 647.
Observations on Acquired Enteroptosis in Obesity. H. Kopf.—p. 651.
Meningitis Caused by Bacterium Pyocyaneum. A. Ghon.—p. 654.

28: 673-708 (May 13) 1932

Pulmonary Collapse in Diseases of Lung. H. C. Jacobaeus.—p. 673.
Comparative Roentgenologic and Pathologico-Anatomic Studies on Bronchi in Pulmonary Tuberculosis, with Especial Consideration of Massive Pulmonary Collapse. N. Westermark.—p. 675.
*Pseudo-Appendicitis and Concomitant Appendicitis During Childhood. (C'tn.). H. Aron.—p. 678.
Experimental and Clinical Observations on Action of Anterior Lobe of Hypophysis. K. Heim.—p. 680.
Tuberculosis and Heredity. Roeder.—p. 682.
Tuberculin Ointment Reaction in Children of German Elementary Schools in Prague. F. Lucksch and O. Jellinek.—p. 684.
Blood Picture in Pulmonary Tuberculosis with Especial Consideration of Erythrocyte Sedimentation Speed and of Blood Groups. A. Sylla.—p. 686.
Demonstration of Tubercle Bacilli in Blood According to Löwenstein. L. Walter and F. O. Höring.—p. 688.
Serodiagnosis of Tuberculosis with New Antigen According to Witebsky-Klingenstein and Kuhn. V. Kindermann and J. Schramek.—p. 689.

Pseudo-Appendicitis and Concomitant Appendicitis During Childhood.—Aron points out that in recent years it has been realized more generally that the diagnosis of appendicitis during childhood is much more difficult than was assumed at first, for children are subject to a number of disorders, which, at least during the beginning stage, simulate appendicitis, and also because simultaneously with other disorders true appendicitis may develop, which, however, should be evaluated differently than acute primary appendicitis. On this basis the terms pseudo-appendicitis and concomitant appendicitis have developed. The term pseudo-appendicitis is applied to disease manifestations in which the symptoms of appendicitis exist, without the appendix being inflamed. On the other hand, concomitant appendicitis is a true appendicitis that concurs with other, usually febrile, infectious disorders. However, it is not merely an adventitious concurrence of two different diseases in the same individual, but the appendicitis is an organic partial manifestation of the primary infectious disease. Following these introductory explanations, the author first discusses the various conditions that in children may simulate appendicitis, such as abdominal tuberculosis, pneumonia, acute articular rheumatism, umbilical colics and intestinal asthma with its main symptom of acetonemic vomiting. He shows that generally appendectomy is inadvisable in these conditions. Further he mentions two disorders that likewise simulate appendicitis but in which appendectomy is not harmful; namely, intussusception and pneumococcic peritonitis. In intussusception an early operative intervention is helpful, and although in the slow progressive form of pneumococcic peritonitis a more conservative treatment is preferable, in the fulminant form a laparotomy may be helpful. In discussing concomitant appendicitis the author first mentions the form that develops as a partial manifestation of measles. In these cases an operative intervention is necessary only if peritonitic symptoms develop. More frequent and more varied in its clinical manifestation is the appendicitis that concurs with tonsillitis. In the majority of cases it disappears again, but occasionally it develops into a severe suppurative appendicitis and laparotomy becomes necessary. The author further discusses the forms of appendicitis that accompany influenza, pneumonia, exanthema subitum, scarlet fever and chickenpox. In the last part of his article he emphasizes that it is no longer justified to resort to a surgical intervention as soon as symptoms of appendicitis develop. He demands that, with the rare exception of severe peritonitis, laparotomy should not be done on the basis of a single examination, but only after careful observation.

Münchener medizinische Wochenschrift, Munich

79: 781-820 (May 13) 1932

Endocranial Complications in Suppurations of Middle Ear and of Accessory Nasal Cavities. L. Haymann.—p. 781.
Estimation of Operability of Malignant Tumors. E. Melchior.—p. 784.
Life Saving Measures in Poisoning and After Surgical Interventions. A. A. Friedländer.—p. 788.
Sterility in Surgery, Especially of Catgut. P. Kuhn and K. H. Dombrowsky.—p. 790.
Bacterial Content of Alcohol. M. Knorr.—p. 793.
*Significance of Intermediary Alcohol (Product of Decomposition of Carbohydrates) for Sleep and Anesthesia. S. Kalter and C. Katzenstein.—p. 793.
*Sun Bronchitis. K. Klare.—p. 795.
Monosymptomatic Acute Appendicitis with Fulminant Course. G. Direktorowitsch.—p. 796.

Significance of Intermediary Alcohol for Sleep and Anesthesia.—In investigating the mechanism of sleep and in the effort to explain it as the result of the action of products of metabolism, Kalter and Katzenstein thought that perhaps the alcohol that develops during decomposition of carbohydrates and during lipolysis may be an important factor. Accordingly they determined the alcohol content of the blood with the patient fasting, during sleep and after the main meal. In 70 per cent of the cases examined, the night values were from 10 to 100 per cent higher than the values detected on awakening. After a heavy noon meal the values were likewise increased and the authors think that the drowsiness after a heavy meal is probably a result of an increase in the alcohol content. However, they are aware of the fact that the intermediary alcohol is only one of the sleep-inducing metabolic products. In the conclusion they point out that the recent report by Zondek (The Journal, May 21, 1932, p. 1826) on bromine formation in the hypophysis and its significance for sleep corroborates the chemical origin of sleep, but they nevertheless persist in their belief that sleep is the result of several products of the intermediary metabolism. They further assume that in inhalation anesthesia intermediary alcohol is probably also a factor.

Sun Bronchitis.—Klare points out that the different constitutional types react differently when exposed to the sun. Whereas dark people generally feel no ill effects from solar irradiation, light persons often show unfavorable reactions. That these reactions may become manifest even in the form of febrile bronchitis, the author observed on numerous children who underwent heliotherapy. The children in whom this form of sun bronchitis develops usually are the exudative lymphatic children. They are usually of light complexion, but of especial importance seems to be also a slight reddish tone in the color of the hair. The skin of these children reacts to sunlight exposure not with pigment formation but rather with inflammation and burning. However, it is not so well known that the irritation by the sunlight may also cause an inflammation of the mucous membrane of the upper respiratory passages. The cause of this reactive inflammation is as yet not fully understood, but the author thinks that it may be due to the decomposition of proteins. In the conclusion he points out that in children with exudative lymphatic diathesis exposure to sunlight should be done with great caution. He considers this warning necessary particularly at the present time, when natural and artificial heliotherapy is often employed without discrimination.

Wiener klinische Wochenschrift, Vienna

45: 577-608 (May 6) 1932

Treatment of Rheumatic Diseases. J. Kowarschik.—p. 577.
*Localized Muscular Spasms and Related Manifestations. J. Wilder.—p. 582.
Group Lead Poisonings Caused by Lead Plate in Millstone. W. Berger, O. Studeny and F. Rosegger.—p. 586.
Concurrence of Tuberculosis and Carcinoma. O. Hoche.—p. 589.
*New Physical Therapy of Circulatory Disturbances. R. Eisenmenger.—p. 591.
Diagnosis of Mediastinal Displacement. H. Bix.—p. 592.
Drinking Cures in Gastric Diseases. W. Zweig.—p. 593.
Therapy of Carcinoma of Female Genitalia. P. Werner.—p. 594.
Advisability of Ligation of Veins in Thrombophlebitis. W. Denk.—p. 595.
Characteristics of Course of Influenza During Present Year. G. Holler.—p. 596.

Localized Muscular Spasms and Related Manifestations.—Wilder describes his observations in three severe cases of crampus neurosis. On the basis of these observations he reaches the conclusion that crampus neurosis is a generalization of a local muscular spasm on the basis of a polyneuritis of various origins; usually it is a radiculitis, in which spondylarthritis deformans is a frequent etiologic factor. In addition to this there is a predisposition to spasm on the basis of a hyperuricemia, the latter being perhaps also responsible for the spondylarthritis. The spasmodic predisposition is indicated clinically by the electrical myospastic reaction. In investigating the literature on crampus neurosis the author had some difficulty, since the sixteen cases that he detected had been reported under various terms. However, in these reports he found additional information on the clinical aspects and particularly on the various causes. He noted that the disorder affects men much more frequently than women, only two of the nineteen patients being women. Race and heredity seem to be of no significance, but it appears that certain occupations, especially those that involve exposure to cold and dampness and that necessitate contact with lead, have a predisposing influence. Alcoholism also seems to be a contributing factor, and the disorder was also noted in patients with diabetes and nephritis; in one instance a trauma of the back preceded. That all these factors really do have significance in the development is proved by the fact that crampus neurosis occurs usually when several of these factors concur. The author discusses the relation between the causal factors in the three cases studied by him and in the cases reported in the literature. He concludes that the latter reports confirm his theories. He further points out that in addition to crampus neurosis the myospastic reaction has yet two other forms of manifestation; namely, myoclonia and myokymia. He shows that these forms have a certain relationship to crampus neurosis.

New Physical Therapy of Circulatory Disturbances.—In the introduction, Eisenmenger discusses the motive powers of the circulation; namely, the cardiac pressure, the activity of the capillaries, the intrathoracic negative pressure and the intra-abdominal positive pressure. He then relates that he was able to influence circulatory disorders by producing supra-abdominal air pressure fluctuations. He employs a suction and pressure air pump that acts by way of the flexible abdominal walls and the soft abdominal organs on the diaphragm and through this on the lungs and heart. He illustrates the efficacy of this treatment by five case reports. The treatment is employed for from five to fifteen minutes at a time. During the first two or three minutes the pressure changes are made more rapidly, namely, from twenty to twenty-two times, but then the frequency is reduced to from twelve to sixteen times. The intensity of the pressure, however, is at first weak and later stronger. In the last part of the article the author discusses the influence of the pressure changes on the venous system, the two auricles, the pulmonary circulation, the aorta, the splanchnic region, the liver and the other thoracic and abdominal organs.

Zeitschrift für Tuberkulose, Leipzig

64: 319-398 (May) 1932

Nineteen Years' Experience with Paraffin Filling in Pulmonary Surgery. G. Baer.—p. 319.
Open Pulmonary Tuberculosis in Children and in Young People. P. Beeh.—p. 331.
Universal Sclerosing Tuberculous Large Cell Hyperplasia (Mylius-Schürmann). E. Freund.—p. 339.
Classification of Pulmonary Tuberculosis. H. Ulrici and R. Roeder.—p. 350.
*Oleothorax Treatment. W. Göbel.—p. 363.
Culture of Tubercle Bacilli in Blood According to Löwenstein. P. Kallos.—p. 371.

Oleothorax Treatment.—Göbel considers only one indication for the treatment by means of oleothorax; namely, the early formation of adhesions during pneumothorax treatment. The adhesions usually develop following exudation. In such patients the transformation of a pneumothorax into an oleothorax makes it possible to maintain the collapse of the lung, and these cases are especially suitable for oleothorax treatment because as a result of the preceding exudation and of previous higher pressures the pleura is used to greater irritation and thus tolerates the oil more readily. Because the resorption of oil is much slower than that of air, after-filling of the oleothorax is necessary only after long intervals. A requirement for the success of the oleothorax is that the existing pneumothorax is still fully active. In certain conditions the author found it advisable to introduce the oil gradually. During the first filling he introduces from 10 to 20 cc., and additional quantities are introduced at intervals of eight days. By degrees he replaces from 200 to 400 cc. of air by oil. For the compression of caverns that do not collapse under the influence of the pneumothorax, he considers oleothorax inadvisable, at least when children and young persons are concerned.

Zentralblatt für Chirurgie, Leipzig

59: 1251-1344 (May 21) 1932

Nature of Analgesia During Introductory Stage of Anesthesia. P. Sudeck.—p. 1259.
*Traumatic Origin of Renal Calculi. F. Oehlecker.—p. 1264.
*Vertebral Fracture with Increasing Paralysis, as Exceptional Case Subjected to Early Operation. F. Oehlecker.—p. 1274.
*Valve Formation in Trepanation for Relieving Pressure. H. Kümmell, Jr.—p. 1282.
Diathermy Operation in Hypertrophy of Prostate. L. Treplin and R. Vogel.—p. 1284.
Renal Resection in Unilateral Long Kidney (Crossed Dystopy). O. Rumpel.—p. 1290.
Ligneous Thyroiditis (Riedel's Disease). J. Oehler.—p. 1295.
Renal Colic Simulating Calculous Colic: Problem of Hemorrhagic Pyelitis (Rumpel). E. Roedelius.—p. 1297.
Present Status of Anesthesia. M. Kappis.—p. 1305.
Pelvirenal Passage of a Thorium Dioxide Preparation in Pyelography. W. Löhr and A. Hendriock.—p. 1312.
Severe Subcutaneous Tearing of Kidneys in Relatively Slight Injury with Remarks on Mechanism of Injury. F. Bonhoff.—p. 1331.
Surgery of Spleen. T. Naegeli.—p. 1335.

Traumatic Origin of Renal Calculi.—Oehlecker illustrates the posttraumatic development of renal calculi by means of the clinical history of a man, aged 45. In a fall from a great height, he sustained in addition to other severe bone fractures a fracture of the third lumbar vertebra, with avulsion of the transverse processes of the lumbar vertebrae. Microscopic examination of the urine revealed the presence of blood. Spinal paralysis was absent and there were indications that only a slight commotio spinalis existed. It is assumed that the oliguria that was observed during the first few days was a result of the shock. During the first three months following the injury, while the bones healed, there was no fever, and renal as well as vesical complications were absent. Later it was noticed incidentally that the urine contained leukocytes and Bacillus coli. Three months after the accident there developed severe manifestations of nephrolithiasis and of pyelonephritis; both kidneys were slightly infected with Bacillus coli and Bacillus proteus. Roentgenoscopy during the fourth month revealed on both sides two renal calculi, and when the former roentgenograms that had been made to control the healing of the vertebral injuries were again inspected, it was found that during the seventh week following the trauma the right kidney contained two small concrements and on the left side some doubtful shadows were visible. However, the roentgenograms that had been made immediately following the trauma gave no indications for the presence of calculi. Accordingly the author thinks that it cannot be doubted that these calculi are the result of the trauma. In discussing the mechanism of the posttraumatic formation of renal calculi he points out that small blood coagula, fibrin floccules, aggregates of bacteria or products of inflammation may act as centers of formation. He thinks that in the reported case fibrin floccules probably acted as centers and that eliminated calcium salts effected a precipitation of colloids and also influenced the crystalloids, and thus the calculi were formed.

Vertebral Fracture with Increasing Paralysis.—Oehlecker points out that in vertebral fractures that are followed by paralysis it is a general rule not to resort to surgical intervention. That this rule may be departed from in an exceptional case, however, he shows in his report of the clinical history of a youth, aged 19, who sustained a fracture of the body and of the arch of the sixth thoracic vertebra. Within three days after this, a complete paralysis of both legs had gradually developed. The tendon, abdominal and cremaster reflexes were abolished and the bladder and rectum were paralyzed, whereas the skin sensitivity was preserved. Noteworthy were especially the severe thoracic and cardiac pains. The laminectomy that was done three and one-half days after the accident revealed that the arch and the inferior articular process of the sixth thoracic vertebra had been broken out. Into the fracture clefts of the arch which ended in the intervertebral foramina, the roots of the spinal nerves were incarcerated. The broken part of the arch was easily removed and following removal of a tumor-like, epidural fat structure that was strongly perfused with blood and had compressed the spinal cord, a pulsation of the dura became again noticeable. At the sixth thoracic vertebra the spinal nerves were resected and following the operation the severe thoracic pains had disappeared. Now, eighteen months after the injury, the youth is again able to march several miles. The author thinks that this favorable result justifies his intervention. He emphasizes that this case does not nullify the general rule not to operate in vertebral fractures with resulting paralysis, and then enumerates the various reasons why in this case an operation was advisable.

Valve Formation in Trepanation for Relieving Pressure.—Kümmell describes and gives illustrations of a method that combines an exploratory trepanation with a measure for relieving pressure. The method consists of a valve formation by suturing the insertion of the temporal muscle on its upper rim to the dura mater. The valve that is formed in this manner withstands a great internal pressure from the brain and it has sufficient elasticity to retain the necessary tension. The method was employed in fifteen cases. Among these were five advanced cases in which the relief from pressure was too sudden or was no longer of influence. These patients died. In some of the others, protrusions developed; but manifestations of incarceration were not noted, and the valve resisted the pressure sufficiently so that real prolapse was prevented. A considerable improvement was effected in five cases. In some of these the good results may have been partly due to the roentgen treatment that was combined with the valve formation. In comparing this method with others, the author shows that it combines the advantages of the Cushing valve with the possibility of the wide opening.

Zentralblatt für Gynäkologie, Leipzig

56: 1201-1264 (May 14) 1932

Stage of Proliferation of Young Corpus Luteum in Human Beings. R. Meyer.—p. 1202.
Unsuitableness of Term "Posterior Occipital Presentation," G. Burckhard.—p. 1210.
Hematoma of Round Uterine Ligament as Rare Obstetric Complication. N. G. Nordenson.—p. 1212.
*Value of Kauffmann's Diuresis Experiment for Test of Cardiac Function in Operative Gynecology. H. Keckeis.—p. 1217.
Therapeutic Procedure During "Entrance Effect" (Entrance of Fetal Head into Pelvis). W. Uter.—p. 1221.
Torsion of Uterine Tube. J. Ross.—p. 1224.
*Treatment of Female Gonorrhea with Mixed Vaccines. H. Gottlieb.—p. 1227.

Kauffmann's Diuresis Experiment for Test of Cardiac Function in Operative Gynecology.—Keckeis found Kauffmann's diuresis experiment a valuable aid in testing the functional capacity of the heart before gynecologic operations. Moreover, he increased the indications for the use of the test. When the test gave a positive reaction a suitable cardiac treatment was instituted, and after this treatment was completed a control test was made. However, the favorable outcome of this control test has to be evaluated with a certain reservation, since it only indicates a good cardiac function during rest. With consideration of the greater requirements during operative trauma, a new control test is necessary after the patient has been up and active. If this test has a favorable outcome, it can be assumed that the cardiac function will be equal to the requirements of anesthesia and operative trauma. If these precautions are taken, one is better protected against undesirable postoperative complications.

Treatment of Female Gonorrhea with Mixed Vaccines.—In the treatment of 250 women with gonorrhea, Gottlieb employed the injection of large doses of mixed vaccine, a method that was first recommended by Löb. But instead of making the injections intravenously the author gave them intramuscularly. The results obtained with this treatment were unusually favorable. Complications were never observed, and it is assumed that the changes in the blood picture and the fluctuations in the temperature are signs of the mild protein action, which the large dose of the mixed vaccine produces in addition to the specific action.

Jurnal Medichnogo Tsiklu, Kiev

2: 1-248 (No. 1) 1932

Mechanism of Stimulating Effect of Blood Transfusion. O. O. Bogomoletz.—p. 5.
Hypoglycemic Hormone of Suprarenal Cortex. N. B. Medvedev.—p. 15.
Influence of Inspiration of Carbon Dioxide on Rhythm and Form of Breathing. E. N. Kohan and V. I. Sokolov.—p. 21.
Influence of Parabiosis on Hormones of Sex Glands and Anterior Lobe of Hypophysis. L. Perelman.—p. 27.
Experimental Posthemorrhagic Anemia in Parabionts. Ya. G. Ujanskiy.—p. 57.
Quantity and Distribution of Glutathione in Organs of Normal Animals: I. N. B. Medvedev.—p. 75.
*Quantity of Glutathione in Organs in Presence of Experimental Tumors: II: N. B. Medvedev.—p. 93.
Influence of Various Forms of Endocrine Deficiency on Quantity and Distribution of Glutathione in Organs of Dogs and Rabbits: III. N. B. Medvedev.—p. 103.
Variation in Quantity and Distribution of Glutathione in Tissues Under Influence of Pancreas and Suprarenals. N. B. Medvedev.—p. 115.
Culturing Kidney Tissue of Mammals. E. O. Tatarinov and O. S. Glazman.—p. 133.
Reaction of Liver to Foreign Proteins. S. Kapran.—p. 141.
Permeability of Erythrocytes for Dextrose in Vitro and in Vivo in Normal and in Disturbed Carbohydrate Metabolism. E. M. Timofeev.—p. 155.
Study of Tissue in Embryonic Tumors. A. I. Smirnova-Zamkova.—p. 171.
Some Biochemical Changes of Organism in Various Pathologic Processes. F. I. Primak.—p. 185.
Pernicious Anemia with Nervous Complications. L. M. Levitskiy and S. M. Sharavskiy.—p. 197.
*Clinical Aspect of Thiocyanate Therapy in Treatment of Hypertension. V. A. Elberg and N. A. Skulskiy.—p. 213.

Quantity of Glutathione in Organs in Presence of Experimental Tumors.—Medvedev studied the glutathione content of the thyroid, suprarenals, kidney, brain, spleen, lungs, heart, muscle, submaxillary gland, pancreas, liver, testis and ovary of normal rats and mice and also of rats and mice infected with experimental sarcoma and carcinoma. He concludes that the quantity of glutathione is greater in the organs of normal animals. During the growth of sarcoma, the glutathione of the tissues decreases. The thyroid is the greatest loser. During the growth of Jobling's cancer all organs except the liver lose glutathione and the thyroid is entirely deprived of glutathione. Ehrlich's cancer in mice is also accompanied by a loss of glutathione. In sarcoma in the rat, the glutathione content of the lung is almost normal. All cancerous tissue is poor in glutathione. The concentration of glutathione in the tumor tissue of Jobling's rat carcinoma is 105 mg. per hundred cubic centimeters, and in Ehrlich's mouse carcinoma it is 128 mg. The low concentration in Jobling's cancer is in favor of a cancerous rather than a sarcomatous origin. During the development of cancer there is a disturbance in metabolism throughout the various organs, and this is manifested in decreased cellular respiration. It is possible that the dissociated metabolism of the cancer cells is a result of the lack of respiratory substance. For further study it is important to examine the glutathione content of the organs during the period of cancerization and especially before the cancer is recognizable morphologically.

Thiocyanate Therapy in Treatment of Hypertension.—Elberg and Skulskiy studied the effect of calcium thiocyanate in the treatment of sixty-three patients with hypertension. They found this substance efficacious not only in the treatment but also in the prophylaxis of hypertension; the blood pressure is decreased and often brought back to normal and at the same time the symptoms present in hypertension disappear. The material for study consisted of arterial hypertension, essential as well as arteriosclerotic. Calcium thiocyanate was administered in doses of 0.05 Gm. and the treatment was extended over a period of eight weeks. The effects lasted in some instances ten months. Positive results were obtained in essential hypertension and the indications were good in arteriosclerosis. The patients were treated with calcium thiocyanate in the form of drops, 0.5 cc. (0.05 Gm. of calcium thiocyanate) or eight drops given by mouth three times a day and preferably after each meal. When patients suffered no difficulty, the dose was at times increased to 0.1 Gm. twice a day for a period of from one to two weeks and in exceptional cases 0.1 Gm. three times a day for one week. Treatment should not last over ten weeks, preferably from six to eight weeks. Theobromine sodiosalicylate and calcium lactate and also dextrose, sometimes atropine and an alkaloid obtained from opium may also be prescribed whenever calcium thiocyanate is administered. This therapy is indicated in arteriosclerosis with hypertension, essential hypertension, climacteric hypertension, vasomotor disturbance with spasms, angina with hypertension, cardiosclerosis, syphilitic aortitis with hypertension, tabes, articular pains caused by gout, and endarteritis. The contraindications include active tuberculosis, various inflammatory conditions of the mucous membrane and inflammation of the peritoneum and abdominal organs, especially the liver and kidneys. The treatment does not necessitate a special dietary regimen and the patient does not have to be hospitalized. The author reports good results in 90 per cent of the patients who had failed to respond to other methods of treatment.

Sovetskiy Vestnik Venerologii i Dermatologii, Moscow

1: 1-56 (No. 3) 1932

Dermatitis Herpetiformis in Children. S. A. Bogdanovich.—p. 13.
Tuberculous Infection of Skin. A. A. Zenin.—p. 18.
*Syphilitic Diabetes. S. Kh. Krapivin.—p. 24.
Clinical Aspect of Untreated Gonorrhea Among Buriat-Mongolians. I. G. Zaks and I. M. Porudominskiy.—p. 29.
*Serodiagnosis of Leprosy. A. K. Bulkin and B. V. Glukhovtsev.—p. 38.
Instance of Reinfection with Syphilis: Case. S. O. Bron.—p. 44.
Hard Chancre in Urethra of Patient with Acute Gonorrhea: Case. I. A. Kogan.—p. 45.

Syphilitic Diabetes.—Krapivin describes the various types of diabetes and discusses the literature. Diabetes occurring as a result of syphilis is not frequent—one writer reports 7.8 per cent of some 500 cases of diabetes. The author reviews the history of a case and concludes that his patient had syphilitic diabetes since antisyphilitic therapy alleviated the ulcerative condition of the soft palate and resolved the infiltration in the walls of the subcutaneous veins; there was improvement of the diabetic condition after antisyphilitic therapy combined with insulin, while insulin alone and diet did not help the condition at all. The syphilis in this patient was congenital; the gummatous condition of the soft palate appeared during early childhood. The clinical picture with severe polyuria, glycosuria, great thirst, polyphagia, poor general condition and diarrhea designated pancreatic diabetes, while absence of nervous symptoms and disturbances was in favor of other forms. Neoarsphenamine and insulin were used in the treatment. When treatment was discontinued the process was again reactivated, and the patient died during a period of coma.

Serodiagnosis of Leprosy.—Bulkin and Glukhovtsev in 1928 chose 148 patients from the Kubansk (Kholmsk) leper colony, on whom they performed the Bordet-Wassermann reaction for the deviation of complement against various syphilitic antigens, the active modification of Hecht-Muttermilch and the precipitation reaction of Kahn. Parallel tests were performed with antigens from leprous tissue and antigens from cultures of actinomyces streptothrix isolated by Bulkin. The blood was drawn from fasting patients with a needle or a syringe and allowed to stand for half an hour in a thermostat and from two to three hours on ice, and a part was centrifugated for active modification reaction of Wassermann the same day the rest was placed on ice till the next day and then inactivated at 56 or 57 C. for thirty minutes. The results were as follows: The Wassermann reaction with a liver antigen was positive in 51.5 per cent; the active modification of Hecht-Muttermilch was positive in 31 per cent, and the Kahn reaction in 41 per cent of the cases. The phenomenon of paradoxical deviation of the syphilitic antigens in leprosy was present in 12 per cent of the cases. The active modification of the Wassermann reaction of Hecht-Muttermilch gives results similar to those with the heart antigen. The divergence in the results of various leprous serums with syphilitic antigen may be due not only to the age of the serum but also to the type of the syphilitic antigen and to the activity of the leprous process. With a sodium hypochlorate treated antigen made from leprous tissue, the positive reactions reached 71.2 per cent (tuberous 83, mixed 73, and anesthetic 51 per cent); with a sodium hypochlorate treated antigen made with cultures of streptothrix, the positives were 88.2 per cent.

Hospitalstidende, Copenhagen

75: 495-522 (March 31) 1932

*Fractures of Radius: Results of Treatment. G. Wieth-Petersen.—p. 495.

Fractures of Radius.—Wieth-Petersen reports 174 cases of fracture of the radius observed from 1927 to 1930. After reposition with a bandage for eight days, active exercise of the wrist was begun. There was no massage or passive exercise. The after-examination in ninety patients showed clinically good results in 86.7 per cent, roentgenologically good in 77.8 per cent and functionally good in 94.4 per cent. About 65 per cent of the patients were able to return to work in the course of four weeks, the remainder in eight weeks at the most, with the exception of one case, which required twelve weeks.

75: 523-550 (April 7) 1932

Constipation and Gastritis. K. Faber.—p. 523.
*Significance of Climbing Curves in Fractional Examination of Stomach Contents. K. Roholm.—p. 530.
Does Zondek's Ether-Sugar Method Mean Improvement in Hormonal Pregnancy Reaction? H. C. A. Lassen.—p. 543.

Climbing Curves in Fractional Examination of Stomach Contents.—Roholm says that, while the climbing curve may be connected with a number of different conditions, there probably are inflammatory changes in the stomach in the majority of cases. The practical importance of the curve is limited, mainly because the meaning of the climbing curve has not yet been definitely determined. The most interesting feature of the curve lies in its occurrence in cases without ulcer. Only by more extensive use of the fractional method of examination can a clearer understanding of climbing curves be reached.

75: 579-604 (April 21) 1932

*Filtration Determination According to Holten and Rehberg in Patients with Hypertonia. E. Roelsen.—p. 579.
*Graduated Intracutaneous Tuberculin Reactions as Adjuvants in Differential Diagnosis Between Tuberculous and Nontuberculous Conditions. J. Holm and S. Sigurdsson.—p. 590.
Course of Complement Fixation in Gonorrheal Disorders of Joints in Women. V. Genner, K. Antons and H. Boas.—p. 597.

Filtration Determination According to Holten and Rehberg in Patients with Hypertonia.—This test, made by Roelsen in twenty-five patients with essential hypertension, showed certain reduction in only four cases, in three of which the Volhard-Strauss test gave normal concentration ability. In five patients with nephrosclerosis or chronic nephritis and three with acute nephritis, the filtration values agreed with the results of Holten and Rehberg in similar cases. There was normal filtration in two patients with orthostatic albuminuria. In seven out of eight persons without signs of renal disease or hypertension, the filtration was normal; in one it was on the borderline. The slight but certain reduction of filtration seen in two cases without signs of renal disease but with transition toward hypertension might, he thinks, be due to a possible renal arteriosclerosis.

Graduated Intracutaneous Tuberculin Reactions as Adjuvants in Differential Diagnosis.—The investigations of Holm and Sigurdsson on these reactions in 116 patients with certain chronic active tuberculosis and in 196 nontuberculous control patients disclosed a definite difference in the sensibility to tuberculin in the two groups, 84 per cent of the tuberculous patients giving a positive reaction on a given dose, while 93 per cent of all the control patients and 86 per cent of the control patients with positive Pirquet reaction gave a negative reaction on the same dosage.

Norsk Magasin for Lægevidenskapen, Oslo

93: 481-608 (May) 1932

*Tuberculosis by Generations. F. Andvord.—p. 481.
*Polypous Tumors of Stomach and Intestine (Invagination of Small Intestine). J. Kaarstad.—p. 495.
*Changes in Blood Sugar Picture During and After Operative Interventions in Ether Anesthesia. E. Thoresen.—p. 499.
*Variations in Leukocyte Count in Operative Interventions. E. Thoresen.—p. 517.
*Treatment of Diabetes with Larger Amounts of Carbohydrates. O. Bang.—p. 522.
Malaria Treatment of Dementia Paralytica: After-Examination in Psychiatric Clinic, Vinderen. K. Bendixen.—p. 539.
Foreign Bodies: Three Cases. F. Leegaard.—p. 562.
After-Examination of One Hundred and Seventy-Four Persons with B C G Vaccination. S. Lunde.—p. 568.

Tuberculosis by Generations.—Andvord finds that the marked difference in the mortality from tuberculosis in Norway, Sweden and Denmark appears also in the predisposition to and reaction on primary tuberculous infection among adults, the Danes being most immune and the Norwegians least. The total death rate from tuberculosis in Norway has declined from 31 per 10,000 in 1900 to 15.8 per 10,000 in 1929, and the mortality from tuberculosis in the first years of life is approaching that of England and of the other Scandinavian countries. In the author's opinion tuberculosis is an infectious disease of the family and the generation, becoming more and more benign in proportion to the increased resistance of the generation, as the result of a certain adaptation or probable inherent immunity. The possibility of a gradual weakening somehow of the virulence of the bacillus is suggested.

Polypous Tumors of Stomach and Intestine (Invagination of Small Intestine).—Kaarstad reports five cases of polypous tumors of the stomach and intestine. In a case of adenomas and papillomas of the small intestine, with invagination, in a patient aged 20, the invagination is ascribed to a polypus. There was cancerous degeneration of polypi of the stomach in two of the other four patients, all older persons.

Blood Sugar During and After Operations.—In 126 patients operated on under ether anesthesia, Thoresen found that during operation the blood sugar was augmented from an average of 108 mg. per hundred cubic centimeters to an average of 171 mg. The rise was demonstrated in 122 cases (98.8 per cent), with a fall in two and no change in two. The rise increased with the duration of the anesthesia, was more marked in children than in adults, in intraperitoneal than in extraperitoneal interventions, and was not affected by subcutaneous infusion of physiologic solution of sodium chloride during operation. The highest value was reached at the end of the anesthesia or some minutes later and was followed by a rapid fall. In ten patients operated on under local anesthesia, increased blood sugar values were noted during operation, but the increases were less marked than in operations under ether anesthesia.

Variations in Leukocyte Count in Operations.—Thoresen reports that in twenty-one out of twenty-three patients operated on under ether anesthesia the leukocyte count was increased up to 29,600 during the operation and the hours immediately after. In twelve of the fourteen cases with serial examinations the maximum increase was noted from two to four hours after operation, in two cases later. The increase was greater in children than in adults, in long anesthesia than in short. In two out of four patients operated on under local anesthesia there was a slight fall, in one a rise, with a maximum of 15,000 the day after operation. The author states that no causal relation can be inferred between the increase in blood sugar and in the number of leukocytes during operation under ether anesthesia.

Treatment of Diabetes with Larger Amounts of Carbohydrates.—Bang would replace the old diet rich in fats and poor in carbohydrates with one high in carbohydrates. He believes the possibility is not excluded that the acidosis and its concomitants found in diabetic persons who neglect their diet or live on a diet low in carbohydrates may be an etiologic factor in the frequent and increasing occurrence of arteriosclerosis in diabetes even in the young.